

**INCORPORATING PHYSICAL/NATURAL RELATED FACTORS WITHIN  
THE ASSESSMENT OF COMMUNITY ATTACHMENT: UNDERSTANDING  
THE CONTRIBUTIONS OF URBAN PARKS**

A Dissertation

by

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## **ABSTRACT**

Community attachment describes individuals' emotional investment in their community through feelings of rootedness and belonging. Community sociologists have predominantly examined community attachment by focusing almost exclusively on social relations. Recently, however, sociologists have noted their neglect of the physical place in traditional community sociological studies. They have thus started to bring the physical/natural environment into their discussions of community attachment. Nevertheless, at this point we are limited in our state of knowledge of the processes behind the physical/natural environment's contribution to peoples' attachment to their communities and whether the effect of such environment varies in different contexts (urban vs. rural).

In an effort to expand our knowledge of this topic, this research aims primarily to explore the contributions of urban physical/natural landscape to community attachment. By selecting parks as a typical form of physical/natural landscape in cities, this study seeks to investigate how people's levels of community attachment may be predicted by 1) peoples' interactions with an urban park, 2) people's emotional connections with such a park, 3) peoples' social interactions with others within the park, and 4) perceived tourists' influence on locals' experience in the park.

This study's data was collected in Discovery Green in Houston, Texas, between June 30 and July 18 of 2015. A total of 606 complete surveys were collected, with a response rate of 71.7 percent. After conducting a series of block model regression analyses, we found the strongest (and positive) predictor of community attachment was

place identity. This indicates that the emotional and affective components of people-place relationship are relevant to understanding the local social fabric of a community. The study also found that residents' perceptions of tourism influence on their emotional connections to the park were significantly and positively associated with community attachment. Respondents perceived tourists' visits to the urban park as strengthening the symbolic meanings and emotional bonds they attributed to the park. Such strong emotional connections found expression in the increased community attachment to the park landscape.

This study, we believe, makes great contributions to the community literature exploring the role of physical/natural landscape in forming community attachment. It first shifts the discussion to the urban landscape in urban communities. Second, utilizing the measures derived from the sense-of-place construct, the study results empirically support the feasibility of synthesizing community and place theories to better understand relationships between people and locales. Third, the study findings are also informed by the urban park and tourism literature. While most of the relevant studies still remain on the descriptive level by counting the number of tourists and investigating their preferences and satisfactions in urban parks, our study has contributed to understanding how residents perceive tourism influence on their experience in urban parks. Finally, the recognition of the tourism-park-community relationships in this study provides significant practical implications for urban park planners and designers and tourism planners to promote their planning and management practices.

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# **CHAPTER I**

## **INTRODUCTION**

### **Statement of Problem**

Community sociologists have been interested in understanding the social and emotional bonds to a specific locality and the implications of such bonds for community life for a long time (Brehm, 2007). In understanding such bonds, community studies have developed the notion of community attachment. Community attachment refers to individuals' emotional investment in their community through feelings of rootedness and belonging.

Scholars have predominantly examined community attachment by placing a major focus on social relations. Recently, scholarship has undertaken exploring how community attachment is influenced by physical/natural environment (Brehm, Eisenhauer & Krannich, 2004, 2006; Clark & Stein, 2003; Matarrita-Cascante, 2014; Matarrita-Cascante, Stedman, & Luloff, 2010). Such scholarship has found that physical/natural environment-based factors lead to emotional connections towards a community (Brehm et al., 2004, 2006; Smith & Krannich, 2000; Matarrita-Cascante et al., 2010). For example, Matarrita-Cascante et al. (2010) found that natural environment-based interactions and residence motivations (linked to the natural amenities of their study communities) resulted in increased community attachment for both long-term residents and seasonal residents in the areas with rich natural amenities.

Sociologists have just started to respond to the neglect of the physical place in traditional community sociological studies and to bring the physical/natural environment

into their discussions of community attachment (Trentelman, 2009). Hence, our current state of knowledge is limited regarding the processes behind the physical/natural environment's contribution to individuals' attachment to their communities. We also know little about whether the effects of such environment vary according to social context (e.g. urban vs. rural). The multifaceted characteristics of the physical-natural environment require further studies to better understand its dimensions as well as targeting different types of contexts as noted by Brehm et al. (2004) and Matarrita-Cascante et al. (2010).

### **Purpose of Research**

In most sociologic research, researchers examining community attachment have emphasized the importance of social ties. These studies have neglected to explore the possibility that people become attached to their communities through their relationships with the physical/natural environment. Furthermore, while most work has focused on the physical environment in rural communities, no research to date has examined whether incorporating physical/natural related factors in community attachment measures are applicable to urban contexts.

In an effort to expand our knowledge of this topic, this research aims to explore the contributions of urban physical/natural landscape to community attachment. By selecting parks as a typical form of physical/natural landscape in cities, this study seeks to investigate the predictive values of 1) peoples' interactions with an urban park, 2) people's emotional connections with such park, 3) peoples' social interactions with others within the park, and 4) perceived tourists' influence in locals' experience in the

park, on their levels of community attachment. The study seeks to answer the research questions as follows:

1. In what ways is one's community attachment strengthened by one's interactions with urban parks?
2. In what ways is one's community attachment strengthened by one's emotional connections with urban parks?
3. In what ways is one's community attachment strengthened by one's social interactions with other people within urban parks?
4. In what ways is one's community attachment impacted by the perceived influences of tourists on residents' experience within urban parks?

### **Organization of the Dissertation**

This dissertation is comprised of six chapters—the Introduction, Literature Review, Framework of Analysis, Research Methods, Results, and Conclusion. Chapter 1 states the problem, the research objective, the research questions, and then lays out the dissertation's organization. Chapter 2 details the related literature, and the constructs that are used and investigated in this study. Chapter 3 summarizes—through a conceptual mode—the relationships between the constructs raised in Chapter 2. Chapter 4, Research Methods, includes descriptions of the study site, the sample selection, the data collection procedure, the measurement and survey design, and strategies of data analysis. Chapter 5 reports the results through a series of statistical analyses, including demographic profiling, bivariate analysis and multivariate analysis. The last chapter discusses the generated results, summarizes the findings, as well as theoretical and

practical implications. It also pointed out the limitations of this study and provides suggestions for further research.

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **Community Attachment**

##### *Definition and relevance in community sociology*

In terms of how it is defined and measured, the concept of attachment varies across disciplines (Brehm et al., 2004). Under the broad umbrella of attachment studies, the two most common constructs are place attachment and community attachment. Place attachment, which often refers to people's positive emotional and affective feelings toward places (Trentelman, 2009), has generated numerous studies in different disciplines, including architecture, anthropology, geography, planning, environmental psychology, leisure, cultural ecology and sociology (Brehm et al., 2004, 2006; Matarrita-Cascante, 2014; Trentelman, 2009). Community attachment, our emphasis here, which considers connections between people and the communities in which they live (Matarrita-Cascante, 2014; Trentelman, 2009), is typically cited in the field of sociology.

Community attachment, though defined variously, is often invoked to emphasize individuals' emotional connections with a geographic location and/or other people within the community (James, 2004). As noted by Hummon (1992), community attachment represents humans' emotional ties to a place emerging from feelings of belonging and rootedness. Cross (2003) defined community attachment as "a positive affective bond between an individual and the place in which they reside, the main characteristics of which is the desire of the individual to maintain closeness to that



place” (p. 13). Community sociologists have used the notion of community attachment to refer to individuals’ emotional connections and sentiment to the community that they live in (Brehm et al., 2004; Matarrita-Cascante et al., 2010).

Community attachment represents an important concept in the social sciences. Sociologists and other social scientists have highlighted the relevance of people’s sentimental bonds with their communities as it fosters positive outcomes (Brehm et al., 2006; Cross, 2003; Hummon, 1992; Matarrita-Cascante, 2014). For instance, Goudy and Ryan (1982) noted that community attachment contributes to communities and their residents regarding improved quality of life, decision-making processes, and sustainable development of local organizations. According to Theodori (2001), community attachment is significantly and positively associated with individual well-being. An individual who are highly attached to a community, expressed greater well-being. Later, Theodori (2004) found that strong community attachment led to increased community-level actions. This finding has critical implications in designating and implementing community development activities (Theodori, 2004). In addition, as tourism has increasingly served as a development tool in many rural communities, researchers have started to examine the effects of residents’ community attachment levels on their attitudes and support toward tourism development. Aside from a few studies (Harrill & Potts, 2003; Um & Crompton, 1987), most research (e.g. Jurowski, 1998; McCool & Martin, 1994; Vesey & Dimanche, 2000; Williams, McDonald, Riden, & Uysal, 1995) has reported that highly attached residents hold more positive attitudes toward tourism impacts and further development than were residents not so attached.

In addition, with the recent interest in including surrounding communities in planning and managing public natural spaces (Harris, Shaw, & Schellas, 1997; Stein, Anderson, & Kelly, 1999), research has reported connections between community attachment and environmentally friendly attitudes and behaviors. For instance, Clark and Stein (2003) found that highly attached community stakeholders were better managers of local ecosystems and public natural lands. According to Brehm et al. (2006), highly attached residents were more likely to express environmental concerns. This study further suggested that in examining a people's attitude toward environmental issues, a variable more useful than their socio-demographic characteristics was their community attachment. Matarrita-Cascante (2014) summarized that the implications of community attachment were not limited to simple emotional notions and desires but that they were significantly related to the well-being of a locality in social, economic and environmental aspects. Research has suggested that highly attached residents, are more satisfied with their jobs (Apostle, Kasdan, & Hanson, 1985), are less depressed (O'Brien, Hassinger, & Dershem, 1994), promote more consumption of locally produced food (Cowell & Green, 1994), and are more involved in community affairs (Brehm et al, 2006; Gooch, 2003; Kelly & Hosking, 2008). Thus, as noted by these studies, community attachment has become an important field of inquiry that is relevant for academics and practitioners given its relevance for multiple aspects of community life.

#### *Theoretical development of community attachment*

The relevance of community attachment has been built on the interest sociologists have paid to understanding the impacts of a changing society on social and

emotional connections to a specific locality (Brehm, 2007). Increasing urbanization during the late nineteenth and early twentieth centuries stimulated concerns for the effects of urban society on community solidarity, sentiment and attachment (Hummon, 1992; Park & Burgess, 1925; Simmel, 1903; Wirth, 1938). Social theorists Toennies, Marx, Weber, Durkheim and Wirth all predicted that the emergence of urban society would result in a declining quality of community life (Fischer, Jackson, Stueve, Gerson, & Jones, 1997; Hunter, 1978). By contrasting life in the rural and small towns with the new form emerging in industrial cities, they pointed out the destructive effects of urbanization and industrialization on community life. They held that the primary kin and family bonds in pristine community had been replaced by a secondary relationship of shallow ties in modern cities. According to Simmel (1903), individuals developed blasé attitudes in cities in order to protect themselves from the stresses caused by a rapidly changing and complex environment. Such nonchalant attitudes, however, were considered a deterioration in community attachment (Theodori & Luloff, 2000). Among classic views of urbanism's effect on community attachment, Wirth's (1938) theory was famous. Wirth claimed that the three defining characteristics of cities of increasing population size, settlement density and heterogeneity of inhabitants, sapped the primary ties of kinship. This in turn, decreased individuals' sentiment and attachment to local communities. Wellman (1979) later named these arguments as the "community lost" perspective.

Although this "community lost" argument was once a garnered a great deal of support, it has been increasingly criticized both theoretically and empirically (Gusfield,

1978). Over time, this perspective failed to find support or verification from several studies that assessed the decline of neighborhood attachment (Hummon, 1992). For example, studies by Yong and Willmott (1957), Gans (1962), and Rivlin (1982) all indicated strong sentiments and social life in urban neighborhoods. Hunter (1975) found local sentiment was actually increased in an urban neighborhood in Rochester, New York from 1949 to 1974. Thus sprang up another thesis of community attachment and modern life “community saved” (Wellman, 1979). Community saved documented extensively the prevalence of strong social bonds and urban society’s sense of community.

While the respective proponents of “community lost” and “community saved” contended with one another, sociologists moved in a new direction the “community liberated” perspective (Wellman, 1979). Community liberated claimed the existence and persistence of primary contacts in cities but not through densely and tightly bounded neighborhoods. Instead, the dispersion of residence, workplace, and neighborhood, as well as easy accesses to transportation and communication encouraged people to develop new primary ties by participating in multiple local institutions and social networks (Wellman, 1979). According to Janowitz (1952), a more appropriate notion in mass society was “community of limited liability”, which gave varying analytical attention to community attachment.

In a seminal study, Kasarda and Janowitz (1974) proposed two models to examine community attachment, based upon the perspectives of “community-lost” and “community-saved.” The first, linear model held that a community’s increasing size,

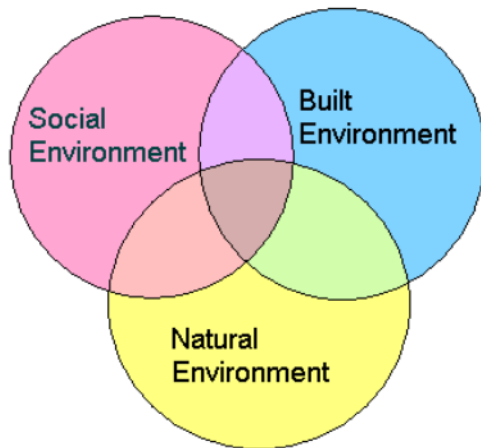
density, and heterogeneity (Goudy, 1990; Gusfield, 1978; Kasarda & Janowitz, 1974; Theodori & Luloff, 2000) led to decreased community attachment. Studies did not support this model and it was rejected. The second, systemic model was applied in numerous studies. They all found that length of residence was the most significant determinant of community attachment. The role that length of residence played was evident across studies as it significantly fostered social integration through localized social interactions and networks with friends, family and other community members, consequently increasing sentimental and emotional connections to local places (Beggs et al., 1996; Goudy, 1990; Kasarda & Janowitz, 1974). Except for some limited cases (McCool & Martin, 1994; Williams et al, 1995), the literature has noted that social relationships individuals develop with other community members are an important determinant of community attachment (Brehm et al., 2004; Jennings & Krannich, 2013; Matarrita-Cascante, 2014). The establishment of social integration and ties is a function of length of residence as time allows opportunities to form and develop strong connections with others in the community (Jennings & Krannich, 2013). As Brehm et al. (2004) suggested, “Long-term residence has been found to be a significant contributor to such attachment by allowing for the development of increased social ties” (p. 407).

Following this argument, contemporary researchers have continued to conceptualize community attachment with a major focus on social aspects. Social studies have demonstrated that community attachment was not strongly related to structural factors like size and density, but to interactions between people and the dynamics of social fabric in communities (Brown, 1989; Gerson, Stueve, & Fischer, 1977; Goudy,

1982; Hummon, 1992; Kasarda & Janowitz, 1974). As Hummon (1992) once stated, community attachment had to be understood in terms of process rather than the ecological structure of settlement patterns in urban areas.

*Paradigm shift from social to physical/natural environment*

Deserving of attention is the conclusion of Gerson et al. (1977): “There are different ways of being attached, ways that are not strongly related to one another. And different types of people are attached in different ways” (Goudy, 1990, p.196). This suggests that there is no single factor that explains all variance in attachment levels. In an interdisciplinary review of community attachment, Hummon (1992) pointed out the multidimensional character of the notion. He argued that while community attachment was most strongly associated with localized social networks, to a lesser extent it was also shaped by individuals’ subjective perceptions of local built environments. This indicated that people’s positive experience with the physical environment would also enhance their sentimental ties to the overall community. According to Cross (2003), people may become attached to three dimensions of a place (Figure 1)—its social, built, and natural environments.



**Figure 1** Object of attachment (Cross, 2003, p. 14)

As noted earlier, to date, however, community attachment studies have largely ignored the natural and built environments (Brehm et al., 2006; Cross, 2003).

Responding to such neglect, a few recent studies (e.g. Brehm, 2007; Brehm et al., 2004, 2006; Clark & Stein, 2003; Matarrita-Cascante et al., 2010; McCool & Martin, 1994; Williams et al., 1995) have expanded the notion of community attachment beyond the social aspect by incorporating the physical/natural landscape to its predictability.

According to McCool and Martin (1994), newcomers became strongly attached to local communities with reference to the local physical environment. This is in opposition to social relationships and networks that were fundamental in traditional understandings of community attachment. This finding was further confirmed by Williams et al. (1995), which encouraged future research to identify the role of the physical/natural landscape in forming community sentiments. Furthermore, Clark and Stein (2003) found high levels of community attachment in both social and natural

landscape—oriented stakeholders. Their study suggested that the physical-natural landscape was an important component in how stakeholders attached with their community. Studies conducted by Brehm et al. (2004, 2006) and Brehm (2007) found that the physical environment was a powerful predictor of residents' attachment levels in high amenity communities. According to Brehm et al. (2004, 2006), community attachment had two dimensions—socially-based attachment and natural environment attachment. Studying the divergence of community attachment levels between long-term residents and in-migrants in high amenity areas, Matarrita-Cascante et al. (2010) found both groups of residents expressed high levels of community attachment determined by physical/natural landscape-related factors. Further, their study found that physical/natural landscape-related factors had a stronger role in community attachment than any other type of factors.

Brehm (2007) cautioned, however, that although the physical/natural environment was an essential facet of community attachment, most often it was embedded within social activities. In a series of interviews with residents in a rural community in the Intermountain West, Brehm (2007) found that most respondents expressed their community attachment resulting from natural attributes as a result of social activities and lifestyles (e.g. hunting, camping or hiking with family and friends, earning a livelihood by raising cattle or sheep) supported by the natural settings. This suggested that it might not be appropriate to view the natural environment as a discrete element entirely separate from the social dimension in understanding its predictive values for community attachment. These two may rather be two interconnected



dimensions that lead to community attachment. A basic level of social interactions performed in the context of natural settings make the physical-natural environment more important and worthy of attention (Brehm, 2007). Thus, in order to better understand in what ways the physical/natural environment helps to form community attachment, it seems essential to also consider the effects of social interactions in natural settings, an area the literature has yet to explore.

Sociologists (i.e. Goudy, 1990; Sampson, 1988) have argued that communities vary in how community attachment is related to certain features. Since most works addressing the contribution made by the physical/natural environment in predicting community attachment have been conducted in rural communities with their rich sources of natural amenities, this raises the question of whether urban physical/natural landscapes/features also contribute to community attachment. Theodori and Luloff (2000) encourage studies to examine natural amenities in urban areas and their effects on community attachment.

To fill the abovementioned gaps in the literature, this research takes place on an urban area to further explore the contributions of urban physical/natural landscape to community attachment. The form of such an urban natural landscape studied here is an urban park (with both natural and built attributes). Before embarking on our analysis, we believe it is pertinent to review the literature associated with urban parks.

## **Urban Physical/Natural Landscape—An Example of Urban Parks**

### *Values and benefits of urban parks*

The Center for Strategic and International Studies (CSIS), a predominant think tank in the United States, forecasts that by 2025, approximately 60% of the worldwide population will live in cities. In 1950, that percentage was 29 percent (CSIS, 2003). Clearly, such a population shift and urban expansion being confined by physical and political boundaries has led to shrinking space per capita. Municipal governments are being forced to address issues regarding loss of green amenities in urban settings (James et al., 2009).

Consequently, over the last decade the landscape has become a vital mechanism shaping contemporary urban design and planning. Landscape urbanism theory argues that the foundation of urban planning and development is not as much the built structures, such as roads, buildings, and walls as it is the landscape (Waldheim, 2006). The fundamental proposition of landscape urbanism—creating a harmonious urban environment through the interactions of human beings and nature—has been widely accepted as an ideal model of urbanism (Waldheim, 2006). This is evidenced by the compelling desire embraced by many urban planners and administrator to build green cities with ample natural amenities.

Building a green city is an ideal that is highly appealing due to its capability to transcend divides in temporality, space and culture (Hestmark, 2000). High quality urban green spaces and amenities are considered reflections of a healthy urban environment and good urban planning and management (Adams & Leedy, 1987; Godefroid, 2001;

Johnston, 1990). According to many urban planners and landscape designers, an indispensable requirement of urban infrastructure is the introducing and preserving of greenery. As the economic, social, and environmental benefits of urban greenery have been widely identified (e.g. McPherson et al., 1997; Nowak & Dwyer, 2000; Stone & Rodgers, 2001), it has been argued, “a city generously endowed with high-quality greenery is a necessary gradient of environmental quality and quality of life” (Jim, 2002, p.128).

Parks are one major type of urban green lands that are critical for improving the quality of urban life (Chiesura, 2004). A good deal of empirical evidence has indicated that urban parks are capable of promoting healthy environments, property values, humans’ physical and mental well-being, and their quality of life (Chiesura, 2004). This is because parks provide multiple types of benefits (e.g. Bradley, 1995; Lutz & Bastian, 2002; Shafer, 1999; Tyrvaenen, 2001).

Urban parks provide significant economic values to city life. Using the Contingent Valuation Method (CVM), del Saz Salazar and Menendez (2007) found the estimates of willingness to pay (WTP) were significantly higher for residents living closer to urban parks. Later, a study led by Poudyal, Hodges, and Merrett (2009) further confirmed such findings. Examining the amenity value of urban parks based on hedonic demand analysis, Poudyal et al. (2009) argued that, “residents prefer the residential locations by trading the size of the urban recreation parks with the proximity of those parks” (p. 982).

In terms of the social benefits offered by urban parks, a recent review of the literature concluded that people who lived closer to those places did better at coping with poverty, exercising cognitive tasks, and managing life issues (OPENspace, 2008). Moreover, empirical evidence suggests that urban parks can facilitate social cohesion among different groups of people gathering in these places (Swanwick, 2009). Social capital is promoted by people engaging in parks for purposes such as social learning or fostering community identity (Roe, 2003).

Additionally, many studies have demonstrated the ecological values and functions of urban parks. It has been suggested that urban parks are significant in providing ecosystem services, which are defined as “the benefits human populations derive, directly or indirectly, from the ecosystem functions” (Costanza et al., 1997, p.253). These ecosystem services, for example, include services of supporting (e.g. increasing biodiversity and habitat), cultural (e.g. enhancing recreational opportunities, property values, and community cohesion), provisioning (e.g. offering water and fuel), and regulating (e.g. reducing noise and air pollution) (Andersson, 2006; Bolund & Hunhammar, 1999; Flores, Pickett, Zipperer, Pouyat, & Pirani, 1998; Jansson & Nohrstedt, 2001; Millennium Ecosystem Assessment, 2005). These services provide important values to individuals’ well-being and thus are an essential aspect of urban sustainable development (Andersson, 2006).

In addition, urban parks also provide psychological and emotional benefits, which contribute to improving people’s quality of life (Prescott-Allen, 1991). Contact with urban nature is linked to individuals’ emotional health, given the evidence

researchers have produced of the various psychological benefits generated by such contact (e.g Chiesura, 2004; Lo & Jim, 2012). Parks are, for example, often considered the “lungs of the city”, affecting individuals’ moods, feelings and emotional health (Wolf, 1998). Experiencing nature in urban parks are often is often reported as helping to strengthen positive feelings (Chiesura, 2004), to increase individuals’ mental well-being (Milligan & Bingley, 2007), and to reduce stress, anxiety, and depression induced by living in cities (Bodin & Hartig, 2003). Matsuoka and Sullivan (2011) categorized these benefits as improvement in the ability to concentrate, enhanced capacity to cope with stress and crisis, improved psychological well-being and increased satisfaction with life. Various studies have discussed the emotional and psychological benefits offered by nature by investigating the emotional satisfaction that people receive from and the emotional attachment with natural areas they develop through contact and interaction with natural environment (Williams & Vaske, 2003). According to Coles and Bussey (2000), by visiting natural spaces, people usually report feelings of happiness, relaxation, and a desire to explore the landscape. Lopez-Mosquera and Sanchez (2011) found that people preferred a good environment as it contributed to personal improvement.

#### *People-park interactions and relationships*

The last few decades have been a change in management philosophy regarding public spaces has changed. It has moved away from management emphasized the merchandise values of natural resources to a paradigm (Kyle, Graefe, Manning, & Bacon, 2004a) that emphasizes, “understanding the subjective, emotional, and symbolic meanings associated with natural places and the personal bonds or attachments people

form with specific places or landscapes” (Williams & Vaske, 2003, p. 1). Accordingly, places are not merely geographic settings with physical boundaries; rather, places are dynamic contexts for multiple types of social processes (Stokowski, 2002). The emergence of this new paradigm within public space management has stimulated studies to further examine the complex relationships between people and natural places, specifically in urban areas (Kyle et al., 2004a; Wong & Domroes, 2004).

Reviewing 90 articles published between 1991 and 2006 in the journal *Landscape and Urban Planning* (LUP), Matsuoka and Kaplan (2008) provided a valuable insight into how humans interact with the urban natural landscapes. This review examined studies that addressed a wide range of human dimensions, all of which referred to human “needs” in a natural environment. These needs were organized into two major groups: 1) “nature needs including contact with nature, aesthetic preferences, and recreation and play” (Matsuoka & Kaplan, 2008, p.9-11), and 2) “human-interaction needs including social interaction and privacy, participation in design, and sense of community identity” (Matsuoka & Kaplan, 2008, p.12). Across these studies, urban residents expressed desire to connect with nature and attractive environments where they lived and worked. Over half of the studies that investigated landscape preferences in such sites as gardens, parks, and greenways, strongly argued that a major preference among urban dwellers was an urban landscape dominated by nature; it was also a key factor in addressing issues associated with urban environmental revitalization and improvement (Matsuoka & Kaplan, 2008). In addition, these studies emphasized how people were catered to by the microclimatic and amenity benefits of green spaces in

compact urban milieus. One of the main goals of urban parks across developed and developing countries alike was the fulfilling of people's needs and desires for recreational activities (Jim & Chen, 2006; Lo & Jim, 2012; McPherson, 2006).

The second group of human-interaction needs focused on the human interactions promoted by the natural environment. Many studies have confirmed that properly designed urban parks can improve and promote social interactions among different population groups, such as adolescents (Owens, 1997), ethnic and racial groups (Gobster, 1998), and urban and neighborhood residents (Oguz, 2000; Saleh, 1999; Shafer, Lee, & Turner, 2000). Moreover, numerous studies have expressed the great importance, when designing urban landscapes, of promoting citizen participation (Matsuoka & Kaplan, 2008). In fact, some researchers considered citizen participation to be an essential component of making sustainable development happens.

There is evidence that the relationships between humans and the urban natural environment are complicated. Researchers have yet to apprehend all the ways that the varied values and functions of urban parks are conveyed to urban residents or what their impacts are on local communities. A review of the park literature has indicated that urban parks are not only places for pursuing a wide spectrum of activities and recreational uses. They are also places that present the features of nature, culture, and social communities (Matsuoka & Kaplan, 2008).

Thus, in keeping with the significance of the physical-natural landscape and its interconnectedness with social interactions in natural settings, urban parks—a type of urban landscape encompassing both natural and social attributes—would contribute

importantly to community attachment. Such community attachment may be fostered through park visitors' interactions with the physical-natural landscape in urban parks through their engagement in recreational activities, through the emotional connections they develop to the park place, and through their social interactions with family, friends and/or other park users within park landscapes.

### *Tourism and urban parks*

The role of people within natural settings has been detailed before. However, we want, in this way, to further explore the role that a particular type of "people" plays as well in the park experience: tourists. It is not secret that tourism is an influential force that reconfigures the localities that it reaches (Wall & Mathieson, 2006). In our case, we are interested in how tourism impacts the experience lived by residents in urban parks, which we believe, should be included in the assessing model of attachment as well.

According to Masberg and Jamieson (1999), the urban park-tourism relationship is neither well understood nor recorded, even though such a relationship certainly exists. One British park manager once said, "A park system well managed for the purpose can be in the front line of efforts to attract tourists" (Welch, 1991, p. 228). Some of the surveys conducted in large cities have produced evidence that a large number of tourists visit urban parks as a major interest. For example, London's Royal Parks attracted six million visits in 1994, 20 percent of which were by international tourists (Curson, Evans, & Bohrer, 1995). In Sydney, a survey of visitors to the Royal Botanic Garden in 2001 indicated that 29 percent of the visits, 3.2 million annually, were overseas tourists, and 10 percent were tourists from other regions within the Australia (Darcy, 1995).



Archer (2006) summarized the roles of urban parks in the city's tourism system from two perspectives. The first role that parks played in urban tourism was as a "stimulator of interest in travel to a specific destination as influence of tourist behavior at the destination" (p. 278). Masberg and Jamieson (1999) argued that parks were an important component in tourism promotional brochures, which further helped to improve a city's image and to stimulate additional urban visits. In tourism development, a second role of urban parks, according to Archer, was "as contributor to visitor satisfaction with the holiday destination experience" (p. 279). A structural equation model developed by Deng, Arano, Pierskalla and McNeel (2010) indicated that urban parks significantly contributed to a city's beauty and to the tourism experience. These were, in turn, positively related to tourism satisfaction and destination loyalty.

Increasingly, many cities use parks as an "engine" to drive the tourism industry. Since the mid-1980s, there has been unprecedented growing numbers of festivals and events hosted in urban parks (Crompton, n.d.). One of the primary objectives for organizing and promoting these activities was to attract tourists from outside the community. It has been suggested that parks having aesthetical landscape designs, zoos, museums, and cultural and heritage artifacts that are recognized as "living works of art" can be tourist attractions contributing to urban tourism development (Crompton, n.d.).

Modern urban parks provide diverse functions and services to a wide spectrum of audiences including local residents and tourists. Tourists and local residents make use of many of the same facilities in urban parks for recreational and leisure purposes. The literature has suggested that local reaction to tourism impacts on the recreation and

leisure pursuits could be either positive or negative. Some studies (e.g. Allen, Hafer, Long, & Perdue, 1993; Davis, Allen, & Cosenza, 1988; Jurowski, Uysal, & Williams, 1997; Kendall & Var, 1984; Liu, Sheldon, & Var, 1987; Murphy, 1983; Pizam, 1978; Rothman, 1978) have found that hosts view tourism as a factor improving the recreational facilities they enjoy or increasing the recreational and entertainment opportunities for the community. Other researchers (Lankford, 1996; O’Leary, 1976) have indicated the negative role that tourist visitation can play, while in the case of outdoor recreation, in increasing crowding and crime. Thus, overall, previous research does suggest tourism influences residents’ pursuit and enjoyment of recreational activities. To reach the study objective of examining the contribution of urban parks in fostering community attachment, it seems relevant that this study includes the tourism-related as an alternative approach to exploring the predictive values of residents’ perceptions of influences, resulting from impacts of tourists’ visits on their experience in urban parks, on community attachment levels.

In sum, as noted in the different literatures summarized in this chapter, the relationship between parks and people has many forms. Such different forms of association with parks can play a role in forming sentiments towards the communities in which parks are located. Altogether, such different forms of experiencing parks form the basis of the framework that we will use in our analysis. We present such framework in the following chapter.

## **CHAPTER III**

### **FRAMEWORK FOR ANALYSIS**

#### **Measurement of Community Attachment**

Traditionally, social scientists have measured community attachment through two dominant models. The first model is the linear model. The linear model holds that community attachment is primarily determined by the structural characteristics of local areas (Kasarda & Janowitz, 1974). The theoretical underpinning of this model is Tonnie's (1887) philosophy of society's transformation from *Gemeinschaft* to *Gesellschaft*, where society was seen as changing to less personable and unattached. The linear model hypothesized that the increasing size, density and heterogeneity of inhabitants caused by urbanization and industrialization would weaken primary bonds of kinship, which in turn would decrease individuals' attachment to their communities (Kasarda & Janowitz, 1974). However, Kasarda and Janowitz (1974) found that increased community size and population density did not undermine the primary and informal bonds. In fact, secondary formal ties developed in modern society enhancing the primary contacts in local communities. Thus, they concluded that structural factors like size and density were not associated with the strength of community attachment. Since then, this model has been increasingly criticized from theoretical perspectives and has consistently failed empirical tests (Goudy, 1990; Gusfield, 1978; Theodori & Luloff, 2000). This has further upheld the fallacy of "community-lost" perspective.

The second model—the systemic model—viewed community as “a complex system of friendship and kinship networks and formal and informal associational ties

rooted in family life and ongoing socialization process” (Kasarda & Janowitz, 1974, p. 329). Even though “residence mobility operates as a barrier to the development of extensive friendship and kinship bonds and widespread local associational ties, once established, such bonds strengthen community sentiments” (Kasarda & Janowitz, 1974, p. 330). The systemic model focused on the predictive values of three systemic factors—length of residence, social class, and age. This model examined two groups of intervening variables, amity and associational bonds (Matarrita-Cascante et al., 2010). Amity refers to individuals’ friendship and kinship bonds within local communities. Associational bonds measure the degree of people’s participation in formal associations in local communities. These two intervening variables were together referred to as local social bonds/networks (Kasarda & Janowitz, 1974). The systemic model examined the contribution of systemic factors and intervening variables along with three dimensions of community attachment, “sense of community (feeling of belong or at home), interest in community (interested in what goes on) and community sentiments (sorry to leave)” (Matarrita-Cascante et al., 2010, p. 200).

Kasarda and Janowitz (1974), by analyzing data from 100 local areas in England, found the most influential systemic factor in predicting community attachment was length of residence. An individual who has lived longer in a community would be more attached to his/her community. This is because, as found in this study, the more time spent in the community, the more opportunities the individual have to become enveloped in local social bonds, which in turn is the most significant intervening factor of attachment to local communities.

This systemic model has since been tested and refined by multiple studies (e.g. Beggs et al., 1996; Goudy, 1990; Stinner, Loon, Chung, & Byun, 1990; Theodori & Luloof, 2000). Goudy (1990) replicated these two models with data collected from 27 communities in Iowa. Goudy (1990) found systemic variable, including size, density, age, income, and length of residence, were strongly related to social bonds and local sentiments. Other studies including Stinner et al. (1990), Beggs et al. (1996), and Theodori and Luloof (2000) further confirmed that length of residence significantly predicted community attachment levels.

It is worth noting, however, that length of residence may not always be an appropriate factor for predicting community attachment across studies. For example, McCool and Martin (1994), Williams et al. (1995), and Matarrita-Cascante et al. (2010) all found newcomers could rapidly develop a strong sentimental tie to a community (however never as strong as the one displayed by long-term residents). According to them, newcomers might develop attachment to a community based on their experience with the local natural landscape, rather than their social bonds with other community members.

As noted earlier, some recent research (e.g. Brehm, 2007; Brehm et al., 2004, 2006; Clark & Stein, 2003; Matarrita-Cascante et al., 2010) has incorporated the natural landscape within the measurement of community attachment. Clark and Stein (2003) found that high levels of community attachment were indicated by natural landscape-oriented stakeholders who experienced more interactions with natural areas. With a list of 14 items representing the different aspects that individuals' perceived as important to

their community attachment, Brehm et al. (2004, 2006) confirmed that community attachment could extend beyond social aspects. The authors pointed out the importance of including natural environment dimension for a more complete explanation of community attachment. Building on these research works, Matarrita-Cascante et al. (2010) found that the natural landscape-related factors were important predictors of community attachment. Thus, natural landscape, in addition to social interactions, has been found to make a significant contribution to community attachment (Brehm et al., 2004, 2006; Clark & Stein, 2003; Matarrita-Cascante et al., 2010; McCool & Martin, 1994; Williams et al., 1995). Following this research line, this study aims to expand the framework of community attachment measures by targeting physical/natural landscape factors.

### **Community vs. Place**

A review of place and community literatures has suggested that while place concepts are often studied through inter- and multidisciplinary angles with diverse research methods and paradigmatic approaches, scholars still have found an area to bring these two bodies of literature together. In an interdisciplinary study, Hummon (1992) linked community sentiments with a sense of place. He found varying dimensions of community sentiments provided contexts where different senses of place were formed, which suggested intimate relationships between people's perspectives on place and their feelings and emotions toward communities.

Matarrita-Cascante et al. (2010) suggested, given the great potential of physical/natural landscape contributing to community attachment, that incorporating a

sense of place construct would shed light on how the natural environment may contribute to community attachment. In particular, two emerging aspects related to the sense of place construct may produce a better understanding of community attachment. First, to explore the *meanings* that individuals hold toward the landscape and how these meanings are tied to attachment (Matarrita-Cascante et al., 2010; Stedman, 2008). As suggested by Matarrita-Cascante et al. (2010), it is important to answer the question of “what meanings produce stronger community attachment” (p. 214). The second aspect associated with this place-community combination attempts to understand whether attachment to a community is closely tied to one’s *affective feelings* about a particular place in the community, a place that meets one’s goals and reflects one’s self-identity. In pursuing its objectives, this study thus includes the sense of place construct as a measure of emotional connections with the park landscape to explain how such connections are associated with community attachment.

### **Sense of Place Construct**

Sense of place has most commonly been used by human geographers to describe humans’ connections with particular geographic locations facilitated by symbolic meanings and value that humans attributed to a particular place (Relph, 1976; Tuan, 1974). A predominant definition of sense of place is a view encompassing three components of “physical environment, human activities, and social and/or psychological processes” (Stedman, 2003b, p.671). Weaving together different literatures across disciplines (Altman & Low, 1992; Fishwick & Vining, 1992; Jorgensen & Stedman, 2001; Kaltenborn, 1998; Relph, 1976, Stedman, 2003a), Farnum, Hall and Kruger (2005)

defined sense of place as “the entire group of cognitions and affective sentiments held regarding a particular locale and the meanings one attribute to such area” (p. 2-3).

Kudryavtsev, Stedman and Krasny (2012) further identified that sense of place encompassed two principle and complementary concepts of place meaning and place attachment (Figure 2).



**Figure 2** Components of sense of place (Kudryavtsev et al., 2012, p.231)

Place meaning refers to the symbolic meanings that individuals attribute to particular places or landscapes (Kudryavtsev et al., 2012). Such symbolic meanings revolve around the answers to descriptive questions of “What kind of place is this” and “What does this place mean to you” (Davenport & Anderson 2005; Jacobs & Buijs, 2011; Kudryavtsev et al., 2012; Smaldone, Harris, & Sanyal 2005, 2008; Stedman 2002, 2008).

According to many place theorists, place meanings are socially constructed on the basis of humans’ experiences with the settings and social actors within (Greider & Garkovich, 1994; Hufford 1992; Stedman 2003b, 2008; Tuan, 1977). Eisenhauer, Krannich and Blahna (2000) suggested “people confer meaning on the environment in



ways that reflect their social and cultural experiences” (p. 422). Accordingly, different individuals or groups, based on the ways in which they interact with the landscape, ascribe different meanings to a particular place.

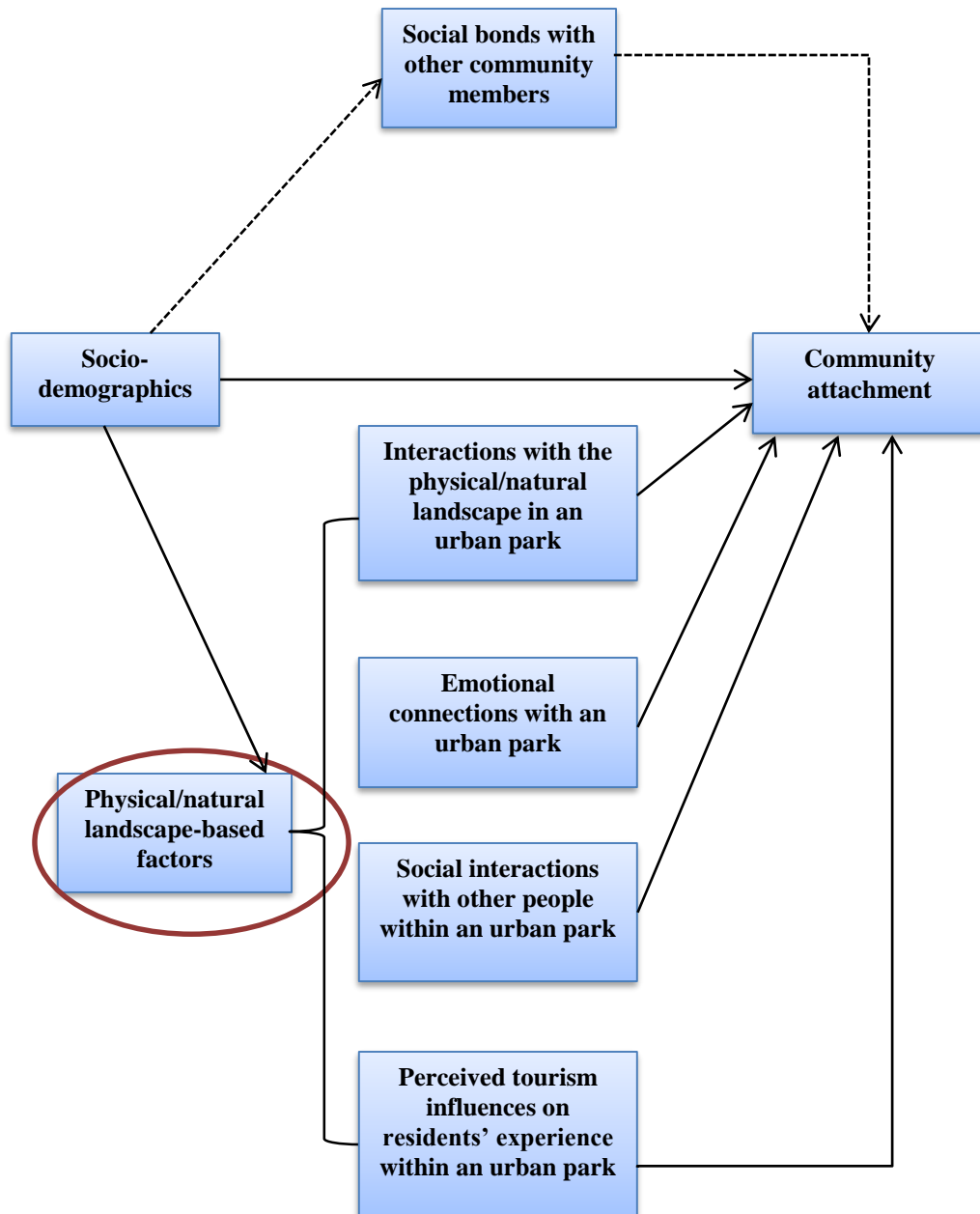
Another principal concept in sense of place theory is place attachment. Place attachment refers to a bond between people and their environment with positive emotion or affection (Altman & Low, 1992; Hummon, 1992; Moore & Graefe, 1994; Williams, Patterson, Roggenbuck, & Watson, 1992). The place attachment construct has been measured in diverse ways. Many scholars have developed and refined the measurement of place attachment with two subdomains, place identity and place dependence (e.g. Backlund & Williams, 2004; Kyle et al., 2004a, Kyle, Graefe, & Manning, 2005; Kyle, Mowen, & Tarrant, 2004b; Moore & Graefe, 1994; Williams et al., 1992; Williams & Roggenbuck, 1989). Place identity, refers to people’s self-identity formed in relation to physical/natural environment based on cognition (Proshansky, 1978). A place can be part of an individual’s self-identity or embedded in his or her definition of self (Kudryavtsev et al., 2012; Kyle et al., 2005). Place dependence, on the other hand, indicates the functional value of a place in satisfying humans’ needs given a range of activities provided by the natural place (Farnum et al., 2005; Halpenny, 2006; Jorgensen & Stedman, 2001; Stokols & Shumaker, 1981; Vaske & Kobrin, 2001).

In summary, sense of place has focused on the multidimensional relationships between people and place from both cognitive and affective perspectives. Based on human’s experience with both the physical/natural landscape, humans ascribe symbolic meanings to a place, and further develop attachment to it (Stedman, 2002a). We believe

incorporating the sense of place approach would help us learn more about how the natural environment contributes to community attachment. Indeed, much ought to be gained by combining these two research traditions.

### **Conceptual Model**

Previous studies noting the importance of physical/natural landscape in predicting community attachment have pointed out, there is a need to explore different forms of humans' interactions and relationships with the physical/natural landscape as they lead to the creation of sentiments for a community. Additionally, these studies indicate the limitation that they have predominantly been conducted in amenity-rich areas, this study asks whether the natural landscape in urban areas have similar effects. Based on these gaps, this study, by taking urban parks as an example, is developed to specifically investigate the predictive values of different forms of human interaction and relationship associated with the urban physical/natural landscape on community attachment. In our study these include 1) residents' interactions with the physical/natural landscape of an urban park, 2) their emotional connections with the park, 3) their social interactions with other people within the park, and 4) perceived tourists' influence on residents' experiences within the park (see Figure 3).



Note: The dashed line indicates relationship **NOT** examined in this study.

**Figure 3** Conceptual model of contributions of urban park landscape-based factors to community attachment

## **Hypotheses**

To guide investigations of this research project, four hypotheses have been developed:

H1: Community attachment levels are positively associated with respondents' interactions with the physical/natural landscape in urban parks.

H2: Community attachment levels are positively associated with respondents' emotional connections with urban parks

H3: Community attachment levels are positively associated with respondent's' social interactions with other people within urban parks.

H4: Community attachment levels are negatively affected by respondents' perceptions of tourism influences on their experiences within urban parks.

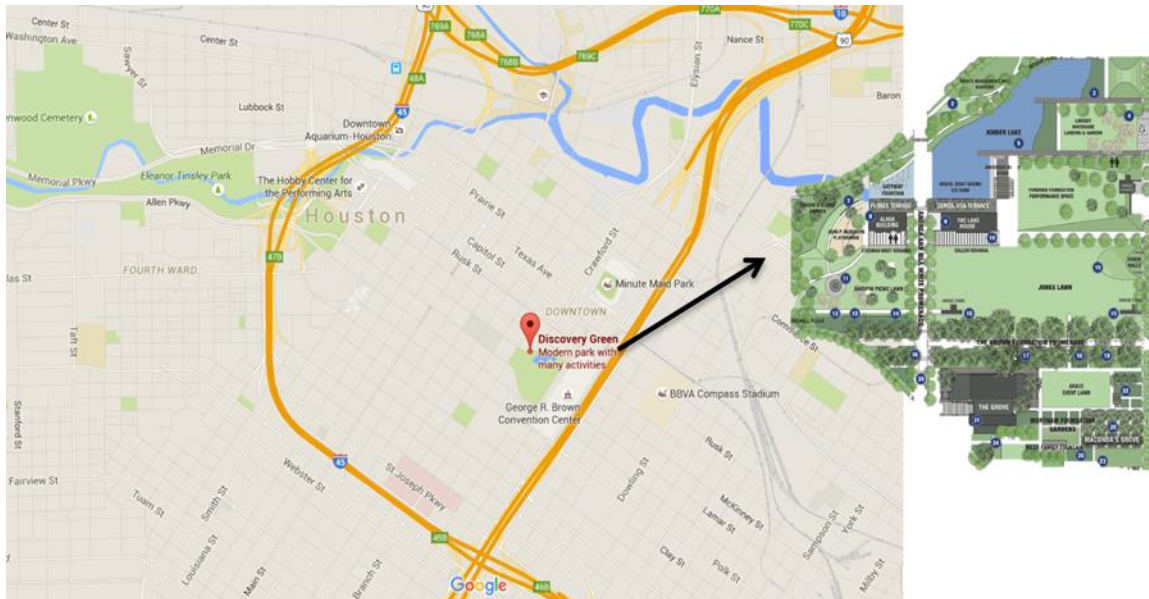
## **CHAPTER IV**

### **RESEARCH METHODS**

#### **Study Area**

The study site of this research is the Discovery Green park in Houston, Texas. Discovery Green is a 12-acre park located in the downtown of Houston (Figure 4). Including a variety of lawns, gardens, trails, walkways, shady areas, and oak trees, the park provides a large open green space in the hyper-dense city center. Discovery Green is also popular for its water features, for example the Kinder Lake and Gateway Fountain, which attract hundreds of children to play daily in the summer season. Moreover, Discovery Green is a home for public art with a substantial collection of monuments and sculptures. All of these significant park features constitute the park's unique landscape as a showcase for nature and culture in the middle of downtown Houston.

The park is managed by the Discovery Green Conservancy, a non-profit organization, who partners with the City of Houston and the Houston First Corporation (Discovery Green Conservancy, 2013). The park receives no funding from the municipal government, but relies on donations from local people and organizations to fund numerous free events and park maintenance. Since it opened in April 2008, Discovery Green Park has attracted more than 1.2 million visitors annually ("Discovery Green," n.d.). According to the Kinder Houston Area Survey, conducted annually by sociologist Dr. Stephen Kleinberg from Rice University, by the year of 2013, about 26 percent of all residents from 10 counties in the Greater Houston metropolitan area have visited Discovery Green.



**Figure 4** Discovery Green park in Houston, Texas (Discovery Green, 2015; Google Maps, 2015)

The key to the park's success is its wide-ranging events and programming. Through hundreds of free activities and programs attracting a diverse audience and numerous repeated visits, Discovery Green park has become a popular urban green space embracing feelings of safety, community, and family-friendliness (Discovery Green Conservancy, 2013). According to a summary report by Discovery Green Conservancy, during the first five years of existence (2008 to 2013), approximately five million people had attended more than 3,300 events offered by Discovery Green. During that timeframe, Discovery Green Conservancy invested \$ 5 million in producing various programs for the public: the money was mainly raised through sponsorship revenue, licensing fees, very occasional ticket sales, and contributions by individuals, corporations and

foundations. These programs targeted a variety of interests: the Health Living Series offered exercise classes; the Families and Children series, such as Toddler Tuesdays and Young Writers Workshop; the Arts series provided the Silent Film concerts, and other cultural events facilitated by many cultural organizations; and the Entertainment series featured a variety of family movies and local rock concerts. Increasingly, Discovery Green has served as a green village for the city, a source of citizens' well-being and happiness, the city's go-to venue for large cultural festivals and mega events, and an exceptionally beautiful landscape in the heart of Houston ("Discovery Green," n.d.; Discovery Green Conservancy, 2013).

Due to its popularity, Discovery Green park has stimulated new construction and development nearby. According to report by Central Houston, Inc., Discovery Green has, in the immediate area, generated about \$625 million in economic development (Discovery Green Conservancy, 2013). Nevertheless, the economic impact of Discovery Green is not limited to such constructions. The park also attracts many visitors from outside Houston. Being located next to the George R. Brown Convention Center and the Hilton Americas Hotel, Discovery Green has helped to lure large corporations like Microsoft and Starbucks, as well as conferences such as the Windpower Conference and Exposition (Discovery Green Conservancy, 2013). Discovery Green has been suggested as having "transformational" power over Houston Convention Center. The park has even served as a large meeting space, and has had many conventions provide activities such as concerts in the park for their attendees. Conventions that do not schedule events still take advantage of the park. Conventioneers always enjoy the green space and programs put

on by Discovery Green, finding the park as a nice destination in the Convention district (Discovery Green Conservancy, 2013). As estimated by the Greater Houston Convention and Visitor Bureau, since it opened in 2008, Discovery Green helped attract, through 2013, 1.6 million out-of-town visitors to downtown Houston for conventions and events until the year of 2013, generating approximately \$200 million for the local economy (Discovery Green Conservancy, 2013). The Greater Houston Convention and Visitor Bureau has listed Discovery Green as one of the city's top attractions for urban green space, outdoor recreation, and cultural and physical activities.

Discovery Green has catalyzed development on the east side of downtown Houston by converting the surface parking lots fronting the George R. Browning Convention Center into a combination of entertainment space and village green. The parks' remarkable success has made it now the city's showcase, playing an important role in bringing major events to the city, such as the 2017 Super Bowl (Discovery Green Conservancy, 2013). Besides the economic impacts, Discovery Green has been a critical part of a quality-of-life agenda by providing a public venue for urban dwellers to interact with the natural environment and participate in a variety of recreational activities. The Convention and Visitor Bureau believes that the park has made a significant change in Houston image, with out-of-town visitors often commenting on this great urban green space. In addition, locals' immediate embrace of the park speaks to urban dwellers' yearning for green and natural spaces in a larger metropolitan region. This success of Discovery Green further influences locals' enthusiasm for other parks in the Houston area, including Market Square and Buffalo Bayou.



In all, Discovery Green has helped Houston become a more communal and green place. Being representative of the urban physical-natural landscape in Houston, Discovery Green benefits the local community by providing numerous activities for leisure pursuits and providing a site where social interactions can take place. These may give rise to feelings of belonging, familiarity and attachment. Therefore, Discovery Green would seem a suitable study site to explore whether and how urban residents become attached to a local community based on the following: their engagement in recreational activities at Discovery Green, their emotional connections established with the park, their social interactions with other park visitors, and their perceptions of how tourism influences their experience associated with the park landscape.

### **Sampling and Data Collection**

The study population of this research study was park users of Discovery Green. Data was collected between June 30 and July 18 of 2015. In order to attain a representative sample of park users, data was collected on both weekdays and weekends from 11 am to 6pm every day, including peak-and off-hours (provided by Discovery Green Conservancy). Samples were selected in different spots within the park: Gateway Fountain, McGovern Playground, Brown Foundation Promenade, Kinder Lake, The Lake House (restaurant), and Sarofim Picnic Lawn.

This study followed Babbie's (2009) guidelines for ethical issues in social research. All participants were voluntary. No harm came to study participants, neither physically nor psychologically. Confidentiality was also guaranteed; participants' information was secured and not made accessible to the public. During each sampling

period, people were randomly approached and were first informed about the research objective and survey procedure of this study. People who agreed to participate were given a printed survey questionnaire to fill out in the field. For each household, only one survey was collected, filled out by a family member who was 18 or older. The questionnaire was made only in English language, so for three participants who could not read and write in English, their children were asked to translate the questions into Spanish, but only parents' responses were recorded.

Also an online survey was created using Qualtrics. The survey had exactly same questions as those surveys distributed in the field. People who agreed to participate in this study but refused to fill the survey in the field were asked to share their email address, and later a survey invitation was sent to their email account. Two sequential emails were sent at intervals of 10 days.

The Discovery Green Conservancy helped promote the study in several ways. First, a blog about this study and its objectives was posted on the park webpage. Second, each week during July 2015, reference of the study was included in emails sent to park members. Third, several survey signs were made to include a short link to the survey (through Bitly URL shortening service), and were placed in different spots in the park. And finally, a link to the online survey was included in messages on Discovery Green's Twitter and Facebook page.

As Table 1 shows, during the field data collection period, a total of 733 people were approached and asked to participate in this study in the park. Six hundred people agreed to participate and were given a printed copy. Of these, 546 surveys were returned

in the park with 20 incomplete and 526 complete surveys. Among those approached in the park, 21 of them preferred to take the survey online and shared their email addresses. Messages could not be delivered to two email accounts. 1 person completed the survey through a link sent to his/her email account. The other 18 could not be identified by their responses (we considered these cases as non-responses). There were a total of 112 people (responding to the requests sent by Discovery Conservancy via social media or signs in the park) who opened the online survey, with 80 of them completing it. The overall response rate including that for printed survey and that for online survey was 71.7%. These are described in Table 1.

**Table 1** Survey response rate

	People approached in the park	733
<b>Printed survey</b>	Surveys distributed	600
	Surveys returned in the park	546
	Non-usable surveys	20
	Surveys completed	526 (71.8 %)
<b>Online survey</b>	Surveys started	112
	Survey completed	80 (71.4%)
<b>Total</b>	Total response	606 (71.7%)

## Measurement and Survey Design

The questionnaire, based heavily on the existing literature in related fields, is composed of six sections (See Appendix A).

The first section aimed at probing individuals' experience with Discovery Green. In the literature that addresses people's interactions with natural areas (Matarrita-Cascante et al., 2010; Moore & Graefe, 1994; Ryan, 2005; Williams & Roggenbuck, 1989), outdoor recreation engagement is an often-used indicator. Borrowing from such studies, the survey asked respondents to indicate the frequency of their visits to Discovery Green. When was their last visit to the park? As Table 2 shows, first time visitors made up 20.7 percent of respondents; 14.2 percent had visited the park within the last week; 26.7 percent had visited the park within the last month; 28 percent had visited the park within the last year; 9.7 percent had visited the park one to five years ago, and 0.8 percent had visited the park more than five years ago. There were big differences among respondents in terms of their number of park visits in the last 12 months. The mean value of visits was 11.98, with a large standard deviation value of 42.33.

**Table 2** Most recent visit prior to the survey day

<b>N = 600</b>	<b>N</b>	<b>%</b>
This is the first time I have visited	124	20.7
Within the last week	85	14.2
Within the last month	160	26.7
Within the last year	168	28.0
1-5 years ago	58	9.7
More than 5 years ago	5	.8

The survey then inquired respondents about their type and intensity of park use. The questionnaire included a list of recreational activities that included attending concerts/movies/shows, special events and festivals, socializing with family and/or friends, going to receptions/parties, outdoor sports and /or games, fitness classes, visiting the gardens, dog walking, kayaking/boating, playing around the fountain area, walking/jogging/running, no specific activity, just enjoy a nice day out, children's programing and/or play, and other activities specified by respondents. Respondents were asked to indicate all recreational activities they had engaged in at the park during the last 12 months based on a five-point Likert scale ranging from 1 = never, 2 = rarely, 3 = sometimes, 4 = often to 5 = always. Respondents who were visiting the park for the first time were instructed to skip this question.

As can be seen in Table 3, the activity of "just enjoy a nice day out" had the highest mean value of 3.33, followed by "socializing with family and/or friends" ( $\bar{x} = 3.16$ ), "playing around the fountain area" ( $\bar{x} = 2.95$ ), "special events/festivals" ( $\bar{x} = 2.37$ ), "walking/jogging/running" ( $\bar{x} = 2.32$ ), "visiting gardens" ( $\bar{x} = 2.31$ ), "children's programing and/or play" ( $\bar{x} = 2.30$ ), "outdoor sports and/or games" ( $\bar{x} = 2.02$ ). Respondents were less likely to have participated in receptions and parties, fitness classes and dog walking at the park, evidenced by the lower mean values of 1.40, 1.42, and 1.47, respectively. In addition, 22 participants specified other activities they often participated in at the park, such as eating lunch, being on school field trip, ice-skating, reading, and bicycling.

**Table 3** Descriptive statistics of participation in recreational activities

Items	N	Mean	S.D.
Concerts/movies/shows	396	1.94	1.13
Special events/festivals	398	2.37	1.15
Socializing with family and/or friends	395	3.16	1.19
Receptions/parties	386	1.40	.81
Outdoor sports and/or games	391	2.02	1.18
Fitness classes	391	1.42	.89
Visiting gardens	390	2.31	1.25
Walking the dog	390	1.47	.97
Kayaking/boating	395	1.53	.95
Playing around the fountain area	402	2.95	1.43
Walking/jogging/running	394	2.32	1.39
No specific activity, just enjoy a nice day out	401	3.33	1.34
Children's programming and/or play	393	2.30	1.43

Note: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always.

To uncover the underlying structures of these items, and summarize patterns of correlations among observed variables, principal component analysis using varimax rotation was performed with these 13 activities (see Table 4). Following Stevens (2002) and using a cutoff value of 0.4, the study generated four factors—"passive activities," "park-sponsored activities," "active activities," and "children-oriented activities." These factors explained a total of 61.70 percent of variance. The Cronbach's alpha value for each of these four factors was calculated as well in order to estimate the internal consistency of each factor with the corresponding items. The alpha values of the third and fourth factors were below 0.7. While a commonly acceptable value for Cronbach's

alpha is above 0.7, some have suggested that in early stages of research, a value of 0.6 to 0.7 is sufficient and meaningful (Nunnally, 1978).

**Table 4** Factor analysis of participation in recreational activities

	<b>Factor loadings</b>	<b>Eigen value</b>	<b>% of variance</b>	<b>Cronbach's alpha</b>
<b>Factor 1 Passive activities</b>		4.08	31.38	.73
Socializing with family and/or friends	.65			
Visiting gardens	.70			
Walking/jogging/running	.74			
No specific activity, just enjoy a nice day out	.77			
<b>Factor 2 Park-sponsored activities</b>		1.52	11.73	.73
Concerts/movies/shows	.85			
Special events/festivals	.79			
Fitness classes	.49			
<b>Factor 3 Active activities</b>		1.30	9.98	.62
Receptions/parties	.55			
Outdoor sports and/or games	.44			
Walking the dog	.68			
Kayaking/boating	.76			
<b>Factor 4 Children-oriented activities</b>		1.12	8.62	.65
Playing around the fountain area	.85			
Children's programming and/or play	.79			
% of variance explained: 61.70%				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO): .81				
Bartlett's Test of Sphericity: 1195.26				
Significance: < .001				
Extraction method: Principal component analysis				
Rotation method: Varimax with Kaiser normalization				

The second section of the questionnaire aimed at examining the emotional connections with the park's landscape. Borrowing from the literature of place meaning

(Stedman, 2002, 2003b), we asked respondents to assess the symbolic meanings that local park users attributed to the park. For this purpose, to the overall question, “What kind of place is the Discovery Green park for you?”, respondents were asked to indicate their levels of agreement or disagreement with each of the 10 following statements through a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The statements included 10 potential meanings that park users might hold for the park: “A place to escape from the pressure of urban life,” “A place to appreciate the beauty of nature,” “A place to participate in outdoor recreational activities,” “A place for citizen’s well-being,” “A place to meet friends and socialize,” “A place that develops positive feelings about the community,” “A place representing the image of Houston,” “A place for tourists to visit,” “A window into the diversity of traditions of Houston,” and “A fun place for children to play.”

Table 5 shows the results of a descriptive analysis to these 10 items, all of which yielded high mean values, suggesting high levels of agreement. The item “a fun place for children to play” had the highest mean value of 4.62. The item “a window into the diversity of traditions of Houston” scored the lowest mean value of 4.00. Principal component analysis revealed a single dimension to these items, through which 52.12 percent of variance was explained. Reliability analysis generated a Cronbach’s alpha value of 0.90, which indicted high internal consistency (see Table 6).



**Table 5** Descriptive statistics of symbolic meanings attributed to Discovery Green

Items	N	Mean	S.D.
A place to escape the pressure of urban life	599	4.02	.93
A place to appreciate the beauty of nature	601	4.09	.91
A place to participate in outdoor recreational activities	599	4.23	.81
A place for citizens' well-being	596	4.12	.82
A place to meet friends and socialize	596	4.10	.87
A place that develops positive feelings about the community	600	4.29	.80
A place representing the image of Houston	599	4.10	.92
A place for tourists to visit	599	4.26	.86
A window into the diversity of traditions of Houston	597	4.00	.97
A fun place for children to play	598	4.62	.70

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, and 5 = strongly agree.

**Table 6** Factor analysis of symbolic meanings attributed to the park

	Factor loadings	Eigen value	% of variance	Cronbach's alpha
Symbolic meanings		5.21	52.22	.90
A place to escape the pressure of urban life	.69			
A place to appreciate the beauty of nature	.76			
A place to participate in outdoor recreational activities	.72			
A place for citizens' well-being	.76			
A place to meet friends and socialize	.70			
A place that develops positive feelings about the community	.78			
A place representing the image of Houston	.74			
A place for tourists to visit	.72			
A window into the diversity of traditions of Houston	.73			
A fun place for children to play	.61			
% of variance explained: 52.22%				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO): .91				
Bartlett's Test of Sphericity: 2667.58				
Significance: < .001				
Extraction method: Principal component analysis				
Rotation method: Varimax with Kaiser normalization				

To measure place attachment, we borrowed from Kyle et al. (2005) to come up with scales that offer two subdomains—place identity and place dependence. The four statements measuring place identity included: “This park means a lot to me,” “I am very attached to this park,” “I strongly identify with this park,” and “I have special connections to this park and the people who visit the park.” The four statements measuring place dependence were as follows: “I enjoy visiting this park more than any other park,” “I get more satisfaction out of visiting this park than from any other park,” “Visiting this park is more important than visiting any other park,” and “I would not substitute other parks for the activities I do here.” Respondents were asked to indicate their level of agreement or disagreement with each of these eight statements through a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

**Table 7** Descriptive analysis of place attachment

Items	N	Mean	S.D.
This park means a lot to me	599	3.69	.93
I am very attached to this park	596	3.40	1.00
I strongly identify with this park	598	3.45	.94
I have special connections to this park and the people who visit the park	597	3.15	.97
I enjoy visiting this park more than any other park	600	3.64	1.01
I get more satisfaction out of visiting this park than from any other park	599	3.61	1.03
Visiting this park is more important than visiting any other park	598	3.31	1.01
I would not substitute other parks for the activities I do here	597	3.68	1.00

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, and 5 = strongly agree.

As Table 7 shows, the item “This park means a lot to me” had the highest mean value of 3.69, followed by “I would not substitute other parks for the activities I do here” ( $\bar{x} = 3.68$ ), “I enjoy visiting this park than any other park” ( $\bar{x} = 3.64$ ), “I get more satisfaction out of visiting this park than from any other park” ( $\bar{x} = 3.61$ ), and “I strongly identify with this park” ( $\bar{x} = 3.45$ ). Other three items, “I am very attached to this park,” “Visiting this park is more important than visiting any other park,” and “I have special connections to this park and the people who visit the park,” had lower mean values, 3.40, 3.31, and 3.15 respectively.

To test the validity and reliability of measures of the place attachment construct, confirmatory factor analysis (CFA) was performed through EQS. As Brown (2015) suggested, CFA is used when the literature has, with a strong theoretical and empirical foundations, already established the underlying structure and dimensionality of a construct. CFA specifies the number of factors and the patterns of indicator loadings in advance. Accordingly, CFA is a significant analytical tool in the later process of scale development as an estimation of scale reliability (Raykov, 2001). The structure of place attachment scale has been specified as including two dimensions—place identity and place dependence—with four items to each dimension (Kyle et al., 2004, 2005; see Figure 5).

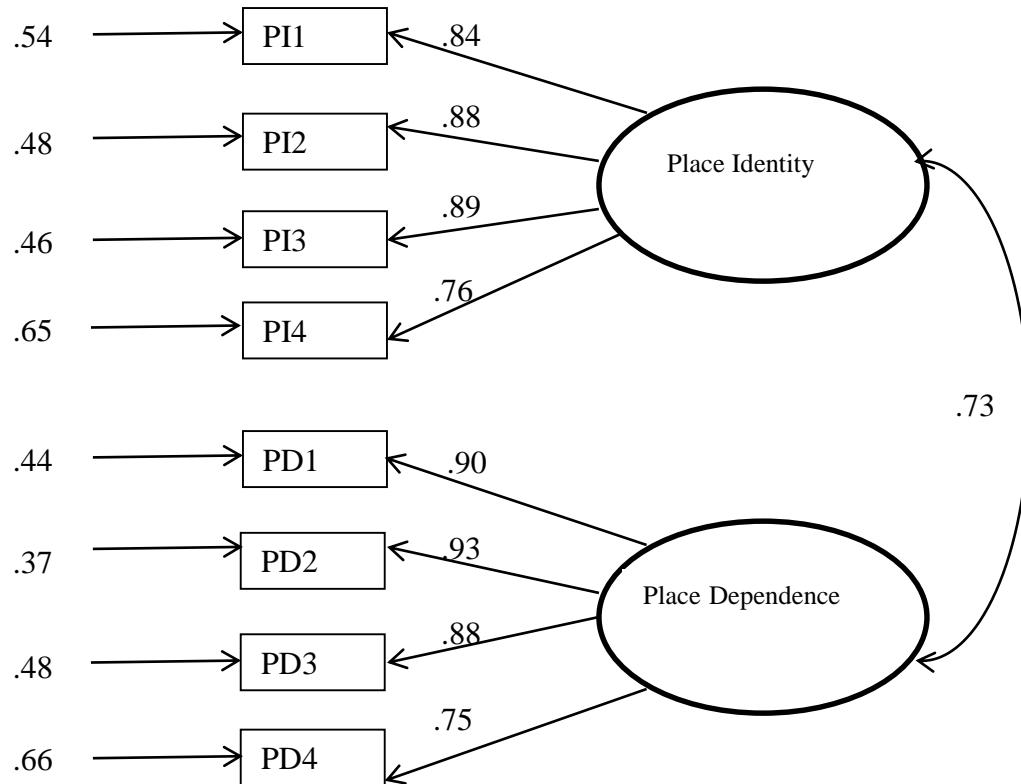
One factor with each corresponding item was added until two factors were added to the hypothesized model. When each factor and corresponding items were added, the study performed LaGrange multiplier (analogous to forward stepwise regression) tests (Kline 2005). Two crossing loadings and four error covariances were identified, and

incrementally dropped through a Wald test (analogous to backward stepwise regression; Byrne, 2006), which sought non-significant change of chi-square (less than 3.84 per degree of freedom at the alpha level of 0.05; Tabachnick & Fidell, 2013). All cross loadings and covariances were ultimately deleted.

The fit indices of the structural model are presented in Table 8. The chi-square for this model was 76.00 with 19 degrees of freedom, and the p-value was less than 0.01. Usually, a non-significant  $\chi^2$  value indicates a well-fit model. However, the  $\chi^2$  value is sensitive to sample size such that  $\chi^2$  tends to be significant with large samples even though the model is fit (Tabachnick & Fidell, 2013). Thus, due to this study's large sample size ( $N = 606$ ), the significant value of  $\chi^2$  was acceptable. The root mean square error of approximation (RMSEA) was 0.0071, less than 0.1 and thus indicating a well-fitting model (Browne & Cudeck, 1993). The value of Comparative Fit Index (CFI) was above 0.95 (0.97), which further indicated the good fit of this structural model of place attachment (Hu & Bentler, 1999; Tabachnick & Fidell, 2013). The values of maximum weighted internal consistency reliability for the factors of place identity and place dependence were 0.916 and 0.941. This means that each factor had high internal consistency with corresponding items. The factor loadings and errors are shown in Figure 5.

**Table 8** Fit indices of structural model of place attachment

Fit Index	Value
Chi-square	$\chi^2 = 76.00$ , $df = 19$ , $p = .000$
Root Mean Square Error of Approximation (RMSEA)	.0071
Comparative Fit Index (CFI)	.98

**Figure 5** Hypothesized model of confirmatory factor analysis on place attachment

The third section aimed at gathering the information about the social interactions inside the park between respondents and their family members, friends, and other local park users. Based on the questions used by Peters, Elands and Buijus (2010), this section asked respondents to indicate the average group size during park visits. Table 9 indicates that 49.7 percent of the respondents often visited the park with 3 to 5 other people; 25.4

percent of respondents visited the park with 1 to 2 other people; 14.7 percent of them visited the park with 6 to 10 other people; 5.2 percent of the respondents visited the park with more than 10 other people, and 5 percent of them usually visited the park alone.

**Table 9** Group size during park visits

<b>N = 599</b>	<b>N</b>	<b>%</b>
Alone	30	5.0
1-2 other people	152	25.4
3-5 other people	298	49.7
6-10 other people	88	14.7
More than 10 other people	58	5.2

Additionally, respondents were asked to indicate how often they socially interacted in the park with each of the following groups: “Family and friends in my household,” “Family members outside my household,” and “Friends outside my household.” Responses ranged from 1 = never, 2 = rarely, 3 = about once a year, 4 = several times a year, 5 = about once a month, 6 = several times a month, 7 = about once a week, to 8 = several times a week. Table 10 suggests that interactions with family and friends in the same household had a slightly higher mean value ( $\bar{x} = 3.79$ ) than interactions with family members ( $\bar{x} = 3.16$ ) and friends ( $\bar{x} = 3.11$ ) outside of the household. Reliability analysis produced a Cronbach’s alpha value of 0.84, indicating a high internal consistency among items.

**Table 10** Descriptive statistics of interactions with family and friends

Items	N	Mean	S.D.
Family and friends in my household	594	3.79	1.92
Family members outside my household	594	3.16	1.99
Friends outside my household	593	3.11	1.94

Note: 1 = never, 2 = rarely, 3 = about once a year, 4 = several times a year, 5 = about once a month, 6 = several times a month, 7 = about once a week, and 8 = several times a week.

The third question in this section asked respondents whether they had ever talked to unknown people during their visits to Discovery Green. Responses were either yes or no. The fourth question asked respondent to indicate how often they interacted with unknown people inside the park under each of the six scenarios: “talking with other parents when children were playing together,” “chatting with other dog owners when walking my dog,” “simply saying hello in passing to others,” “playing inform sports or games with others,” “talking with other people while attending concerts, dance parties or other special events,” and “talking with other people while exercising, participating in fitness classes, or other programming offered in the park.” Responses ranged from 1 = never, 2 = rarely, 3 = sometimes, 4 = often, to 5 = always. The fifth question inquired about respondents’ overall frequency of interactions with unknown people in the park through a five-point scale ranging from 1 = never to 5 = always. Respondents who had never talked to unknown people in the park were instructed to skip the fourth and fifth questions.

Among 593 valid cases, 351 (59.2 percent) respondents said they had at least once talked to unknown people in the park; 242 (40.8 percent) indicated they had never

done so. As noted in Table 11, for respondents who had at least once talked to strangers in the park, such interactions were more likely to happen in scenarios of “saying hello in passing to others” ( $\bar{x} = 3.59$ ), “talking to other parents while children were playing together” ( $\bar{x} = 2.90$ ), and “talking to others when attending some special events held in the park” ( $\bar{x}=2.53$ ), or “talking to others while exercising, taking fitness classes or participating in other programming” ( $\bar{x} = 2.03$ ). Comparatively, communications with unknown people were less likely to occur while “playing sports or games” ( $\bar{x} = 1.95$ ), and “walking dogs” ( $\bar{x} = 1.93$ ). Overall, the mean score of interacting with unknown people in the park was 3.22, suggesting that interactions between strangers occurred at a frequency of sometimes or often.

**Table 11** Descriptive statistics of interactions with unknown people in the park

Items	N	Mean	S.D.
Talking with other parents when children were playing together	346	2.90	1.20
Chatting with other dog owners when walking my dog(s)	341	1.93	1.26
Simply saying hello in passing to others	344	3.59	1.06
Playing inform sports or games with others	344	1.95	1.12
Talking with other people while attending concerts, dance parties or other special events	343	2.53	1.31
Talking with other people while exercising, participating in fitness classes, or other programming offered in the park	343	2.03	1.26
Overall interactions with unknown people in the park	338	3.22	.89

Note: 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always.



The last question in this section asked respondents whether they were more or less likely to interact with others in the park than to have such interactions in other spaces in the downtown area (e.g., along the street). Responses included 1 = very unlikely, 2 = somewhat unlikely, 3 = undecided, 4 = somewhat likely, and 5 = very likely. Of 580 valid cases, descriptive analysis resulted in a mean score of 3.52 and a standard deviation of 1.103, which indicated that respondents were somewhat more likely to interact with others in the park than to do so in other public spaces.

The fourth section in the questionnaire examined respondents' perceptions of tourism influence on their experience in Discovery Green. Respondents were first asked to indicate their levels of agreement or disagreement on each of the seven following statements through a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Based on the questions used by Liu et al. (1987), Allen et al. (1993), and Lankford (1996), these statements included both positive and negative tourism impacts on residents' recreational experience in Discovery Green park: "Increased recreational opportunities in the park," "Reduced the qualities of outdoor recreational facilities in the park," "Created an unpleasantly overcrowded park for the local population," "Encouraged a variety of cultural activities hosted in the park by the local population (e.g. music, arts)," "Disrupted the peace and tranquility of the public park," "Increased traffic problems that affect local people's visit to the park," and "Attracted more investment to the park for recreational activities." Scores of four negatively stated items were reversed (1 = 5, 2 = 4, 4 = 2, and 5 = 1) to generate mean values that were consistent in the direction of interpreting results. Higher mean values indicated that

respondents were more positive toward tourism impacts on their recreational experience in the park. The descriptive analysis results shown in Table 12 indicated that generally, respondents showed positive attitudes toward tourism influence on their recreational experience in Discovery Green.

**Table 12** Descriptive statistics of tourism influences on recreational experiences

Items	N	Mean	S.D.
Increased recreational opportunities in the park	594	3.71	.85
Reduced the qualities of outdoor recreational facilities in the park	593	3.55	.99
Created an unpleasantly overcrowded park for the local population	592	3.65	1.03
Encouraged a variety of cultural activities hosted in the park by the local population	589	3.75	0.86
Disrupted the peace and tranquility of the public park	586	3.79	1.01
Increased traffic problems that affect local people's visit to the park	589	3.53	1.09
Attracted more investment to the park for recreational activities	589	3.70	.91

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, 5 = strongly agree.  
Mean values were calculated after recoding 4 negatively stated items

To identify the underlying structure of these seven items, a principal component factor analysis was conducted. As Table 13 shows, the KMO value (0.75) indicated these items were accepted for factor analysis. Two factors were generated through varimax rotation. The first factor, referring to negative impacts, had an eigenvalue of 2.82, and explained 40.39 percent of variance. The four items loaded in this factor had a

good correlation (Cronbach's alpha = 0.84). The second factor included three positive impact items, which had an Eigen value of 1.84 and explained 26.34 percent of variance. Internal consistency between these items was satisfactory, evidenced by Cronbach's alpha of 0.73.

**Table 13** Factor analysis of tourism influences on recreational experiences

	<b>Factor loadings</b>	<b>Eigen value</b>	<b>% of variance</b>	<b>Cronbach's alpha</b>
<b>Factor 1: Negative impacts</b>		2.83	40.39	.84
Reduced the qualities of outdoor recreational facilities in the park	.78			
Created an unpleasantly overcrowded park for the local population	.87			
Disrupted the peace and tranquility of the public park	.85			
Increased traffic problems that affect local people's visit to the park	.80			
<b>Factor 2: Positive impacts</b>		1.84	26.34	.73
Increased recreational opportunities in the park	.78			
Encouraged a variety of cultural activities hosted in the park by the local population	.82			
Attracted more investment to the park for recreational activities	.81			
% of variance explained: 66.73% Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO): .76 Bartlett's Test of Sphericity: 1339.02 Significance: <. 001				
Extraction method: Principal component analysis Rotation method: Varimax with Kaiser normalization				

This fourth section also measured the potential tourism impacts on local residents' emotional connections with Discovery Green. For this purpose, respondents were asked to indicate their levels of agreement or disagreement with each of the nine statements through a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Based on relevant literatures (e.g. Kyle et al., 2004, 2005; Lankford & Howard, 1994; Liu et al., 1987; Stedman, 2002, 2003b), these statements included: "Tourists visiting to Discovery Green make it more a tourist destination," "Tourists improve the environmental quality of Discovery Green park," "Tourists help to enhance the appeal of Discovery Green park," "The image of Houston is reflected through Discovery Green park to tourists," "Tourists make Discovery Green park more a place for recreation and leisure," "Tourists at Discovery Green park help to develop stronger positive feelings about the community by local population," "Tourists' visitation to Discovery Green enhances cultural identity of host community," "Tourists at Discovery Green park help the local population to be more attached to the park," and "Tourists at Discovery Green park enhances its contribution to local residents' well-being."

Table 14 shows that overall, respondents held neutral or slightly agreeable attitudes toward tourism influences on their emotional connections with the park. Scoring the highest mean value (3.73) was "The image of Houston is reflected through Discovery Green park to tourists." Scoring the lowest mean value (3.39) was "Tourists improve the environmental quality of Discovery Green park." A principal component factor analysis with varimax rotation on these nine items was then performed. The

results suggested these items were unidimensional with high internal consistency (Cronbach's alpha = 0.91; see Table 15).

**Table 14** Descriptive statistics of tourism influence on residents' emotional connections with the park

Items	N	Mean	S.D.
Tourists visiting to Discovery Green park make it more a tourist destination	599	3.44	.97
Tourists improve the environmental quality of Discovery Green park	599	3.39	.90
Tourists help to enhance the appeal of Discovery Green park	599	3.60	.85
The image of Houston is reflected through Discovery Green park to tourists	598	3.73	.83
Tourists make Discovery Green park more a place for recreation and leisure	595	3.52	.84
Tourists at Discovery Green park help develop stronger positive feelings about the community by local population	599	3.63	.84
Tourists at Discovery Green park enhance the cultural identity of host community	596	3.67	.82
Tourists at Discovery Green park help the local population to be more attached to the park	598	3.51	.88
Tourists at Discovery Green park enhance its contribution to local residents' well-being	597	3.53	.87

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, and 5 = strongly agree.

**Table 15** Factor analysis of tourism influence on residents' emotional connections with the park

	<b>Factor loadings</b>	<b>Eigen value</b>	<b>% of variance</b>	<b>Cronbach's alpha</b>
Items		5.49	61.00	.91
Tourists visiting to Discovery Green park make it more a tourist destination	.63			
Tourists improve the environmental quality of Discovery Green park	.77			
Tourists help to enhance the appeal of Discovery Green park	.81			
Tourists make Discovery Green park more a place for recreation and leisure	.63			
Tourists make Discovery Green park more a place for recreation and leisure	.82			
Tourists at Discovery Green park help develop stronger positive feelings about the community by local population	.84			
Tourists at Discovery Green park enhance the cultural identity of host community	.82			
Tourists at Discovery Green park help the local population to be more attached to the park	.84			
Tourists at Discovery Green park enhance its contribution to local residents' well-being	.84			
% of variance explained: 61.01%				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO): .93				
Bartlett's Test of Sphericity: 3277.47				
Significance: < .001				
Extraction method: Principal component analysis				
Rotation method: Varimax with Kaiser normalization				

The third question in this section asked respondents whether they had ever interacted with tourists in the park. Of 579 valid cases, only 23.7 percent (137 in number) of the respondents had ever interacted with tourists; 76.2 percent (442 in number) never interacted with them. We then asked those 137 respondents about their feelings regarding their interactions with tourists in the park. We borrowed scales used by Teye,

Sonmez and Sirakaya (2002), and Woosnam and Norman (2010), which included five statements: “My interaction with tourists are positive,” “I enjoy interacting with tourists in the park,” “I have developed friendship with tourists,” “I feel affection towards tourists who visit Discovery Green park,” and “I am proud to have tourists come to Discovery Green park.” Respondents were asked to indicate their levels of agreement or disagreement with each of these statement through a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The descriptive analysis results are shown in Table 16.

**Table 16** Feelings about social interactions with tourists within the park

Items	N	Mean	S.D.
My interactions with tourists are positive	137	4.22	.69
I enjoy interacting with tourists in the park	137	4.17	.69
I have developed friendship with tourists	137	3.21	1.09
I feel affection towards tourists who visit Discovery Green park	136	3.49	.84
I am proud to have tourists come to Discovery Green park	137	4.19	.76

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, 5 = strongly agree.

Section five of the questionnaire aimed to examine respondents’ level of community attachment. The first question was the following: “How interested are you to know what goes on in this community?” Responses ranged from 1 = not interested at all to 5 = very interested. As Table 17 shows, more than two thirds of the respondents indicated that they were very interested or interested in knowing what was going on in their community, while 2.5 percent indicated they were not interested at all.

**Table 17** Interest to know what goes on in the community

<b>N = 564</b>	<b>N</b>	<b>%</b>
1 = Not interested at all	14	2.5
2 = Slightly not interested	31	5.5
3 = Neither not interested or interested	124	22.0
4 = Moderately interested	182	32.3
5 = Very interested	213	37.8

The second question of this section measured respondents' sentiments toward their community. They were asked: "Suppose that for some reason you had to move away from this community, how sorry or pleased would you be to leave?" Respondents could choose one of the following: 1 = very sorry to leave, 2 = somewhat sorry to leave, 3 = it wouldn't make any difference one way or the other, 4 = somewhat pleased to leave, and 5 = very pleased to leave. The results (see Table 18) suggest that 36 percent of respondents would feel very sorry to leave, 36.9 percent would feel somewhat sorry to leave, 22.1 percent believed that whether they left or stayed would make no difference to them, 3 percent would feel somewhat pleased to leave, and 2 percent would feel very pleased to leave.



**Table 18** Sorrow leaving the community

<b>N = 594</b>	<b>N</b>	<b>%</b>
Very sorry to leave	214	36.0%
Somewhat sorry to leave	219	36.9%
It wouldn't make any difference on way or the other	131	22.1%
Somewhat pleased to leave	18	3.0%
Very pleased to leave	12	2.0%

The third question measured respondents' perceived community attachment. We borrowed the scale used by Matarrita-Cascante et al. (2010), which included the following five statements: "I feel this community is a real home to me," "I feel I belong to this community," "I feel I am fully appreciated as a member of this community," "most people in this community would go out of their way to help me if I was in trouble," and "most of the people in this community can be trusted." Respondents were asked to indicate their levels of agreement or disagreement with each of these five statements through a five-point scale ranging from 1 = strongly disagree, 2 = disagree, 3 = neither disagree or agree, 4 = agree, to 5 = strongly agree.

The descriptive analysis results are shown in Table 19. Scoring the highest mean value (3.72) was the item "I feel I belong to this community." Scoring 3.70 was "I feel I am fully accepted as a member of this community," and scoring 3.69 was "I feel this community is a real home to me." Two items, scored slightly lower "Most people in this community would go out of their way to help me if I was in trouble" ( $\bar{x} = 3.36$ ) and "Most of the people in this community can be trusted" ( $\bar{x} = 3.27$ ).

**Table 19** Descriptive analysis of perceived community attachment

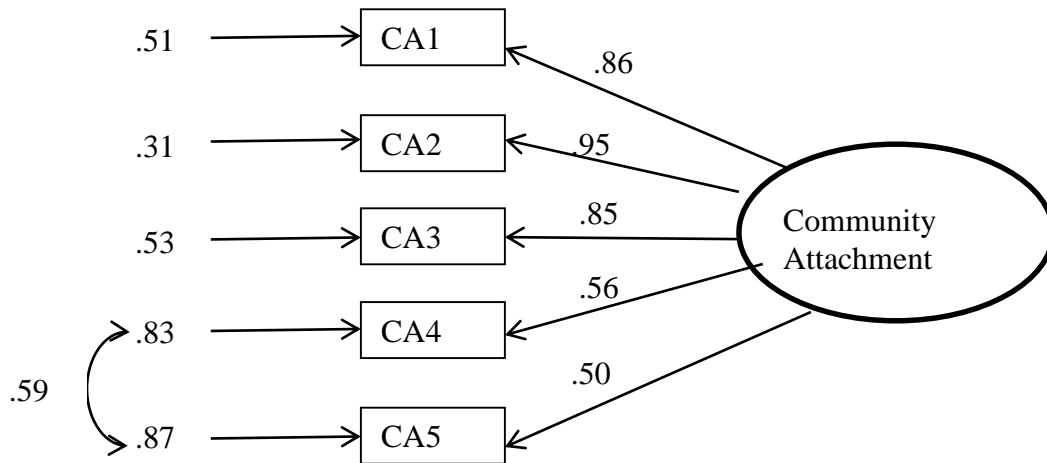
Items	N	Mean	S.D.
I feel this community is a real home to me	603	3.69	.94
I feel I belong to this community	602	3.72	.91
I feel I am fully accepted as a member of this community	603	3.70	.90
Most people in this community would go out of their way to help me if I was in trouble	601	3.36	.90
Most of the people in this community can be trusted	595	3.27	.93

Note: 1 = strongly disagree, 2 = disagree, 3 = neither agree or disagree, 4 = agree, and 5 = strongly agree.

Confirmatory Factor Analysis (CFA) was performed on this community attachment construct using EQS. The structure of community attachment has been identified that all these five items are unidimensional (Matarrita-Cascante et al., 2010). Each corresponding item was added until all items were added to the hypothesized model (see Figure 6). LaGrange multiplier (analogous to forward stepwise regression) tests were performed when each corresponding item was added (Kline 2005), and one error covariance was identified. The fit indices (Table 20) indicated the model fits these data very well (RMSEA = 0.0097, CFI = 0.98), although the  $\chi^2$  was significant at 0.01 due to the large sample size. The community attachment had high internal consistency, as maximal weighted internal consistency reliability was 0.94. The factor loadings and errors are shown in Figure 6.

**Table 20** Fit indices of structural model of community attachment

Fit Index	Value
Chi-square	$\chi^2=26.520$ , $df=4$ , $p=0.000$
Root Mean Square Error of Approximation (RMSEA)	.0097
Comparative Fit Index (CFI)	.980



**Figure 6** Hypothesized model of confirmatory analysis on community attachment

The final section of the questionnaire gathered respondents' demographic information. This included their age, gender, zip code, highest education level completed, race/ethnicity, current employment status, household composition, and household annual income.

To enhance its validity, this survey questionnaire was reviewed by the dissertation committee. Specific attention was paid to the general questionnaire format, clarity of items, order of items, questionnaire instructions, avoidance of biased items and double-barreled questions. The revised questionnaire was then pre-tested among 20 faculty members and graduate students at Texas A&M University and other academic

institutions in U.S. Modifications were made based on feedback from the pretest before the final version of the questionnaire was distributed to all selected samples.

### **Data Analysis**

In order to accomplish the study objectives and to test the proposed hypotheses, a series of analysis steps were conducted. The first step involved the descriptive statistics of subjects' demographics. This step analyzed respondents' demographic profile, including age, gender, location of residence, education level, race/ethnicity, employment status, household composition, and annual income. The second step involved bivariate analysis examining the relationships between each independent variable and the dependent variable of community attachment. Finally, block model regression analyses were performed to examine the contributions of each construct identified in the conceptual model (Figure 3). The first model examined the predictive values of respondents' sociodemographic information on their community attachment. The second model added the variables measuring respondents' interactions with the physical/natural landscape in Discovery Green. The third model introduced the variables measuring the emotional connections with the park. The fourth model introduced the variables measuring the social interactions with other people within the park. The final model introduced the variables measuring residents' perceptions of tourism influences on their experience in the park.

## **CHAPTER V**

### **RESULTS**

#### **Profile of Respondents**

The field data collection and online survey together yielded 606 responses in total, and the response rate was 71.7 percent. Table 21 illustrates respondents' demographics (i.e., gender, age, education, race/ethnicity, employment status, household composition, and annual household income).

As Table 21 shows, five respondents neglected to provide information on gender. More females (431 or 71.1 percent) took part than did males (170 or 28.3 percent). The age was measured in years, and the median age was 33. Nearly one in four respondents (24.4 percent) had completed a 4-year college/university bachelor's degree; 21.4 percent of them had college degrees; 19.4 percent of them had high school degrees or GED; 17.8 percent of them had advanced degrees (Master's, Ph.D., JD, MD); 12.5 percent of them had degrees in trade, technical, or vocational training; and 4.5 percent had education less than high school.

Slightly less than half the participants (46.6 percent) were Hispanic or Latino; 27.0 percent of them were White or Anglo; 18.7 percent of them were Black or American Americans; 4.8 percent were Asian or Pacific Islanders; 0.5 percent were Native Americans or American Indians, and 2.3 percent indicated they belonged to other ethnicity groups. In addition, among 596 valid cases, 56.7 percent were currently wage earners; 12.2 percent were self-employed; 11.7 percent were homemakers; 7.6 percent were students; 5.0 percent were out of work and looking for job; 2.3 percent were out of

work but not currently looking for job; 1.8 percent were retired; 0.5 percent were unable to work; 0.2 percent were in the military, and 1.8 percent were in other situations.

In addition, the households of respondents were made up of three people (24 percent), four people (24 percent), two people (15.7 percent), and five people (15.4 percent); 8.6 percent of the respondents were living alone. Less than one-third of respondents (31.5 percent) have one child who was 5 years old or younger, and 15.2 percent had two such children; 24.4 percent of the respondents had one child between 6 and 18; 17.3 percent had two such children, and 8.3 percent had three such children. The majority of the respondents (85.3 percent) lived with no adults over the age of 65; 7.2 percent lived with one such adult, and 5.9 percent lived with two such adults. The median annual household income of respondents before tax in 2014 was between \$50,000 and \$74,999; however, for 7.7 percent of them it was less than \$10,000, and for 5.6 percent of them it was over \$200,000.

**Table 21** Profile of respondents

<b>Socio-demographic variable</b>	<b>N</b>	<b>%</b>
<b>Gender (N = 601)</b>		
Female	431	71.7
Male	170	28.3
<b>Age (years; N = 601)</b> Median = 33		
<b>Highest level of education had completed (N = 602)</b>		
Less than a high school degree	27	4.5
High school degree or GED	117	19.4
Some college	129	21.4
Trade/technical/vocational training or associate degree	75	12.5
4-year College/University Bachelor's degree	147	24.4
Advance degree (Master's Ph.D., JD, MD)	107	17.8
<b>Race/ethnicity (N = 603)</b>		
White/Anglo	163	27.0
Hispanic or Latino	281	46.6
Black or African American	113	18.7
Native American or American Indian	3	.5
Asian/Pacific Islander	29	4.8
Other	14	2.3
<b>Employment status (N = 596)</b>		
Employed for wages	338	56.7
Self-employed	73	12.2
Out of work and look for work	30	5.0
Out of work but not current looking for work	14	2.3
A homemaker	70	11.7
A student	45	7.6
Military	1	.2
Retired	11	1.8
Unable to work	3	.5
Other	11	1.8
<b>Number of people in household (N = 592)</b>		
#=1	51	8.6
#=2	93	15.7
#=3	142	24.0
#=4	142	23.9
#=5	91	15.4
#≥6	73	12.4

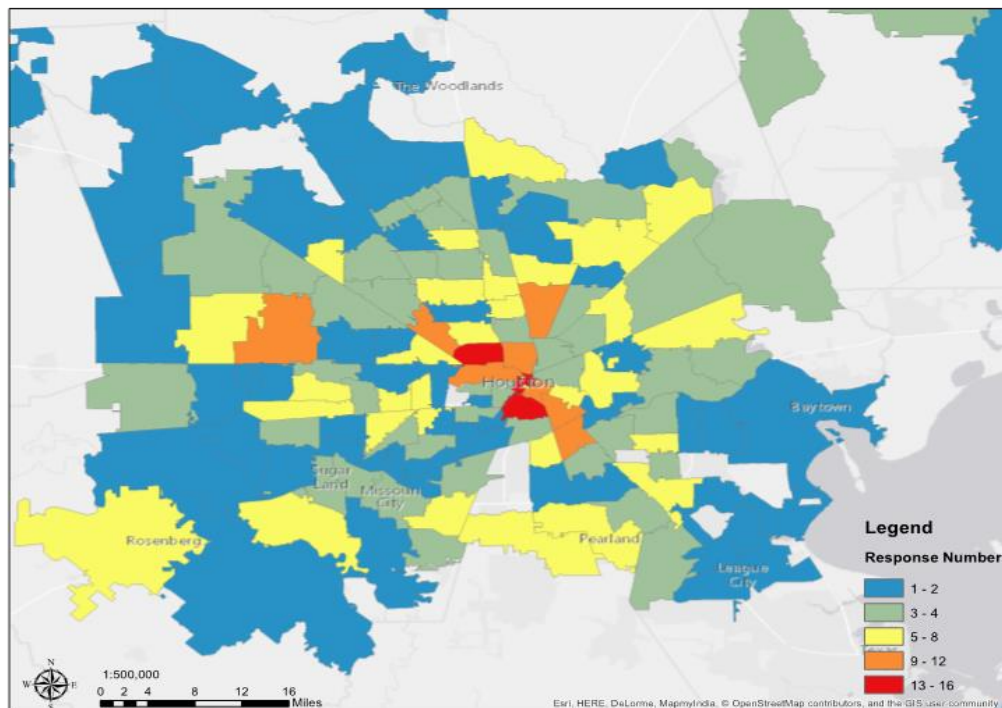
**Table 21** Continued

<b>Socio-demographic variable</b>	<b>N</b>	<b>%</b>
<b>Number of children age 5 or younger (N = 593)</b>		
# = 0	295	49.7
# = 1	187	31.5
# = 2	90	15.2
# = 3	12	2.0
# = 4	8	1.3
# = 5	1	.2
<b>Number of children age 6 to 18 (N = 589)</b>		
# = 0	278	47.2
# = 1	144	24.4
# = 2	102	17.3
# = 3	49	8.3
# = 4	12	2.0
# = 5	4	.7
<b>Number of adults over age 65 (N = 580)</b>		
# = 0	495	85.3
# = 1	42	6.9
# = 2	34	5.9
# ≥ 3	9	1.6
<b>Household annual income (N = 575)</b>		
Less than \$10,000	44	7.7
\$10,000 to \$14,999	27	4.7
\$15,000 to \$24,999	32	5.6
\$25,000 to \$34,999	42	7.4
\$35,000 to \$49,999	91	15.9
\$50,000 to \$74,999	125	21.9
\$75,000 to \$99,999	58	10.2
\$100,000 to \$149,999	74	13.0
\$150,000 to \$199,999	46	8.1
\$200,000 or more	36	5.6

The zip codes of respondents were also collected. The distribution of their zip codes can be seen in Figure 7. The colors tell how many respondents were from each area. For example, red-colored areas indicate where 13-16 respondents reside; blue-



colored areas indicate where 1-2 respondents reside. The figure shows that most respondents were from the inner-Houston area, with few of them coming from outside the city, but still within Harris County.



**Figure 7** Distribution of zip code of residence  
 (Source: Esri, DeLorme, HERE, MapmyIndia  
 Note: the boundaries of zip code areas were drawn from U.S. Census Bureau,  
[https://www.census.gov/geo/maps-data/data/kml/kml\\_zcta.html](https://www.census.gov/geo/maps-data/data/kml/kml_zcta.html))

## Sampling Representativeness Check

In order to check the representativeness of our data, the demographics of the research sample were compared to those of the Houston population. As Table 22 shows, in 2013, the Houston population was composed of 49.9 percent females and 50.1 percent

males (U.S. Census Bureau, 2013). In this study, more females (71.7 percent) were represented than males (28.3 percent). The median age of the Houston population was 32.4 years, similar to our participants' median age of 33 years (U.S. Census Bureau, 2013). In terms of education levels, 75.4 percent of the Houston population had high school degrees or higher and 29.2 percent of them had bachelor's degrees or higher (U.S. Census Bureau, 2013); in our study, 53.3 percent of respondents had high school degrees or higher and 42.2 percent of them had bachelor's degrees or higher. The race/ethnicity of the Houston population was similar to that of our respondents. The biggest racial/ethnic group was Hispanic or Latino (43.6 percent in Houston vs. 46.6 percent in our study), followed by White/Anglo (25.8 percent vs. 27.0 percent), Black or African American (23.0 percent vs. 18.7 percent), Asian/Pacific Islander (6.2 percent vs. 4.8 percent), and Native American or American Indian (0.2 percent vs. 0.5 percent). According to the 2013 American Community Survey, in 2013, 68.1 percent of the Houston population were employed, and 31.9 percent of them were unemployed (U.S. Census Bureau, 2013). However, our respondents indicated a higher employment rate of 76.7 percent and 21.5 percent of respondents being unemployed. Our study participants reflected a larger household size than that of the Houston population in general. Whereas only 23.9 percent of the Houston population had four-or-more-person household, 51.7% of our respondents had four or more persons in their household (U.S. Census Bureau, 2013). Finally, the median annual household income of our respondents was between \$50,000 and \$74,999, while the median annual household income of the overall Houston population was \$45,010 (U.S. Census Bureau, 2013).

In summary, compared to the census data of the Houston population, our sample was homogenous in terms of age and race/ethnicity. However, our study sample appeared to under-represent the male population since it was comprised of many more female participants. The survey participants were better educated and had a higher employment rate. They also had larger households and slight higher annual incomes. In generally, regardless whether the survey was administered via paper, web, or a combination of the two, female, better-educated, and employed respondents responded at a much higher rate, while age and race/ethnicity were not relevant to response bias (Duune et al., 1997; Sax, Gilmartin, & Bryant, 2003; Sheikh & Mattingly, 1981). According to Babbie (2009), even the most carefully selected samples never perfectly represent the population from which it was selected; there is always some degree of sampling error. Thus, although some demographic differences between our study sample and the overall Houston population were identified, this study sample was still representative of the Houston population with its diverse demography.

**Table 22** Demographic comparison between survey samples and Houston population

	Survey participations	Houston population
<b>Socio-demographic</b>	%	%
<b>Gender</b>		
Female	71.7	49.9
Male	28.3	50.1
<b>Age (Median)</b>	33 (years)	32.4 (years)
<b>Education</b>		
High school degree or higher	53.3	75.4
Bachelor's degree or higher	42.2	29.2
<b>Race/ethnicity</b>		
White/Anglo	27.0	25.8
Hispanic or Latino	46.6	43.6
Black or African American	18.7	23.0
Native American or American Indian	.5	.2
Asian/Pacific Islander	4.8	6.2
<b>Employment status</b>		
Employed	76.7	68.1
Unemployed	21.5	31.9
<b>Household size</b>		
1-person household	8.6	31.8
2-person household	15.7	29.1
3-person household	24.0	15.2
4-or-more-person household	51.7	23.9
<b>Household income (Median)</b>	50,000 to 74,999 (dollars)	45,010 (dollars)

Note: The demographic data of the Houston population were drawn from U.S. Census Bureau  
[http://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml#none](http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#none)

To address the relationships between several factors and community attachment, the study performed bivariate and multivariate analyses. The dependent variable, community attachment, was measured with a unidimensional construct including five items (see Table 20 and Figure 6). A mean scale was created through all five items and used as the dependent variable in the bivariate and multivariate analyses. The mean scores of each factor of multi-factor variables, as well as those of unidimensional variables, were calculated and treated as independent variables in the following analyses.

## **Bivariate Analysis**

To identify all significant relationships, the study examined the bivariate correlations between each independent variable and the dependent variable. As Table 23 shows, not controlling for other variables, the sociodemographic variables highly associated with community attachment included age and distance to the park. The variable of age was positively related with community attachment ( $r = .091$ ,  $p < 0.05$ ). The variable of distances between respondents' residential locations to Discovery Green was negatively related to community attachment ( $r = -.160$ ,  $p < 0.01$ ). Other variables including gender, education, employment status and household income were not significantly associated with community attachment.

Not controlling for other variables, respondents' interactions with the park's landscape were significantly associated with community attachment. Positively related to community attachment were the variables of participation in passive activities ( $r = .151$ ,  $p < 0.01$ ), park-sponsored activities ( $r = .251$ ,  $p < 0.01$ ), active activities ( $r = .162$ ,  $p < 0.01$ ), and children oriented activities ( $r = .187$ ,  $p < 0.01$ ).

The variables measuring emotional connections with the park in this study—place meaning, place identity, and place dependent—were all significantly and positively associated with community attachment, not controlling for other variables. Place identity was found as the most highly correlated variable with community attachment ( $r = .508$ ,  $p < 0.01$ ), followed by place dependence ( $r = .434$ ,  $p < 0.01$ ), and place meaning attributed to the park ( $r = .363$ ,  $p < 0.01$ ).

In addition, not controlling for other variables, the social interaction variables were also highly correlated to community attachment. The variables of average group size during visits ( $r = .116$ ,  $p < 0.01$ ), interactions with family and friends inside the park ( $r = .200$ ,  $p < 0.01$ ), and interactions with unknown people in the park ( $r = .229$ ,  $p < 0.01$ ), were all positively related to community attachment.

Finally, not controlling for other variables, the tourism influence variables of positive impacts on recreational experience and impacts on emotional connections with the park were significantly and positively related to community attachment, evidenced by the  $r$ -values of  $.290$  ( $p < 0.01$ ) and  $.411$  ( $p < 0.01$ ) respectively. However, perceived negative tourism impacts on residents' recreational experience in the park were not closely related to community attachment ( $r = .027$ ,  $p > 0.05$ ).

Additionally, correlations of the predictor variables shown in the correlation matrix (see table 23) were all below 0.8, indicating that there were no strong correlations between predictor variables (Field, 2013). This initially indicated the absence of multicollinearity in following regression analyses. In order to avoid missing more subtle forms of multicollinearity, collinearity diagnostics of VIF and tolerance statistic were performed and their results were discussed in the following section.

**Table 23** Correlations matrix (N=401-603)

	x1	x2	x3	x4	x5	x6	x7	x8	x9
<b>Community attachment (x1)</b>									
<b>Sociodemographics</b>									
Age (x2)	.091*								
Distance to the park (x3)	-.160 **	.019							
Education (x4)	-.053	.247**	-.010						
Employment status (x5)	-.038	-.007	-.005	.164**					
Income (x6)	-.039	.199**	.090*	.560**	.175**				
<b>Interactions with the park's landscape</b>									
Passive activities (x7)	.151**	.034	-.153**	-.003	-.005	-.015			
Park-sponsored activities (x8)	.251**	.178**	-.191**	.092*	.018	.108*	.433**		
Active activities (x9)	.162**	-.018	-.096*	-.040	.005	-.031	.557**	.517**	
Children-oriented activities (x10)	.187**	-.094*	.027	-.081	-.069	-.055	.290**	.231**	.269**
<b>Emotional connections with the park</b>									
Place meaning (x11)	.363**	.029	-.002	-.033	.048	-.059	.141**	.112*	.040
Place identity (x12)	.508**	.150**	-.203**	.003	-.014	-.008	.272**	.347**	.246**
Place dependence (x13)	.434**	.015	-.187 **	-.133**	-.008	-.179**	.208**	.228**	.255**
<b>Social interactions with others within the park</b>									
Average group size (x14)	.116**	-.157**	.065	-.302**	-.129**	-.218**	-.025	-.013	.143**
Interactions with family and friends inside the park (x15)	.200**	-.083	-.191**	-.103**	-.013	-.123**	.321**	.214**	.239**
Interactions with unknown people inside the park (x16)	.229**	.130**	-.094*	.085*	.007	.067	.241**	.250**	.247**
<b>Tourism influence on experience in the park</b>									
Negative impacts on recreational experience (x17)	.027	.113**	-.006	.132**	.038	.103**	.043	.061	-.097*
Positive impacts on recreational experience (x18)	.290**	.112**	-.042	.001	.109**	-.004	.130**	.137**	.121**
Impacts on emotional connections (x19)	.411**	.023	-.047	-.059	.034	-.086*	.162**	.099*	.157**

\*\* . Correlation is significant at the 0.01 level (1-tailed) \* . Correlation is significant at the 0.05 level (1-tailed).

**Table 23** Continued

	x10	x11	x12	x13	x14	x15	x16	x17	x18
<b>Community attachment (x1)</b>									
<b>Sociodemographics</b>									
Age (x2)									
Distance to the park (x3)									
Education (x4)									
Employment status (x5)									
Income (x6)									
<b>Interactions with the park's landscape</b>									
Passive activities (x7)									
Park-sponsored activities (x8)									
Active activities (x9)									
Children-oriented activities (x10)									
<b>Emotional connections with the park</b>									
Place meaning (x11)	.137**								
Place identity (x12)	.180**	.487**							
Place dependence (x13)	.203**	.436**	.690**						
<b>Social interactions with others within the park</b>									
Group size during visits (x14)	.248**	.079	-.022	.087*					
Interactions with family and friends inside the park (x15)	.251**	.162**	.363**	.342**	.100*				
Interactions with unknown people inside the park (x16)	.178**	.198**	.334**	.298**	.044	.275**			
<b>Tourism influence on experience in the park</b>									
Negative impacts on recreational experience (x17)	.020	.132**	.031	.011	-.096**	-.074*	.079		
Positive impacts on recreational experience (x18)	.107*	.427**	.334**	.304**	.076*	.107**	.296**	.128**	
Impacts on emotional connections (x19)	.044	.433**	.332**	.359**	.104*	.125**	.159**	.057	.459**

\*\* Correlation is significant at the 0.01 level (1-tailed). \* Correlation is significant at the 0.05 level (1-tailed)



## **Multivariate Analysis**

The block regression model used here to predict community attachment included five sequential blocks: 1) sociodemographics, 2) interactions with the park's landscape; 3) emotional connections with the park, 4) social interactions with others inside the park, 5) perceived tourism influence on residents' experience in the park (see Table 24). The first model tested the predictive values sociodemographic variables including age, distance to park, education, employment status, and household income. Respondents' age was measured in years, and was analyzed as an interval variable. The variable of highest education level completed was coded into six categories: 1 = less than a high school degree, 2 = high school degree or GED, 3 = some college, 4 = trade/technical/vocational training or associate degree, 5 = 4-year college/university bachelor's degree, and 6 = advance degree. Employment status was recoded as dichotomy (1 = employed, and 0 = unemployed). Household income was coded into 10 categories ranging from 1 = less than \$10,000 to 10 = \$200,000 or more.

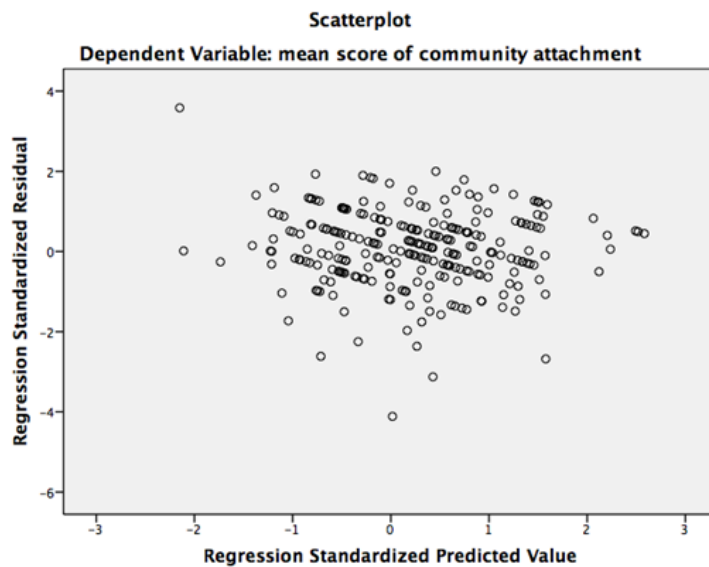
Five cases with high z scores (larger than 3.29) on age were detected as univariate outliers. Raw scores that were one unit smaller than the next most extreme scores were assigned to these extreme cases to reduce the undue influence they may cause (Tabachinick & Fidell, 2013). Regression diagnostics were also performed to test several regression assumptions dealing with multicollinearity, lack of autocorrelation, homoscedasticity, and normal distributions of errors.

When more than one predictors is included in a regression model, researchers need to address one important assumption—the absence of perfect multicollinearity (Field, 2013). That is, none of the independent variables are linear combinations of other independent variables; otherwise it would be impossible to obtain unique estimates of the regression coefficients (Field, 2013). Perfect multicollinearity is rare in social science; what is more likely to happen is strong multicollinearity. To check whether there was collinearity in the data, researchers often use VIF statistic and its reciprocal, the tolerance statistic. The general rule of thumb is, if the VIF is less than 10 and the tolerance is above 0.2, there is no potential problem (Bowerman & O'Connell, 1990; Menard, 1995; Myers, 1990). As a check for multicollinearity, the VIF values and tolerance were examined. The former ranged from 1.08 to 2.50, and the latter ranged from 0.40 to 0.91. These indicated that there was no collinearity within the data.

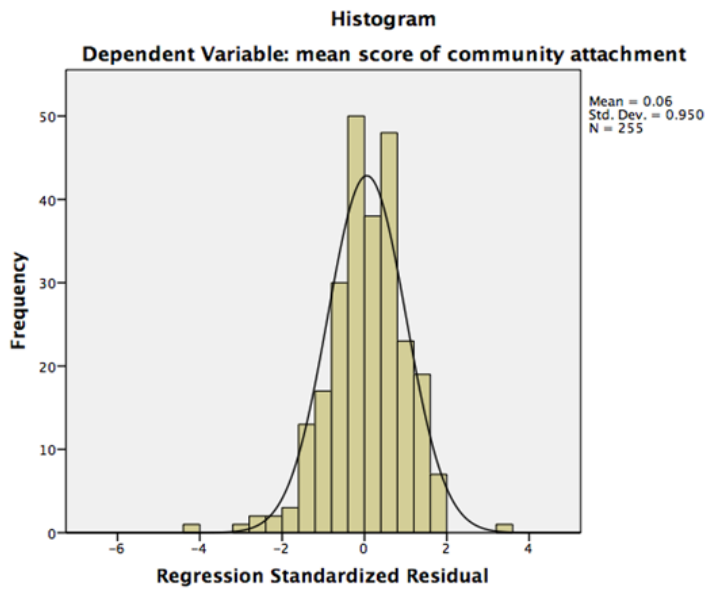
Next, the Durbin-Watson test was performed to examine whether the residuals in the model were independent, also known to be an assumption of no autocorrelation. The violation of such an assumption would lead to invalid estimates of confidence intervals and significance tests. According to Durbin and Watson (1951), a value of 2 indicates unrelated residuals. The Durbin-Watson test value was very close to 2 (1.944), indicating the assumption of independence of errors was not violated.

In addition, the assumption of homoscedasticity assumes that the error terms exhibit the similar variance across each level of the independent variables. As we can see from in Figure 8, the scatter plot of regression standardized residuals against regression

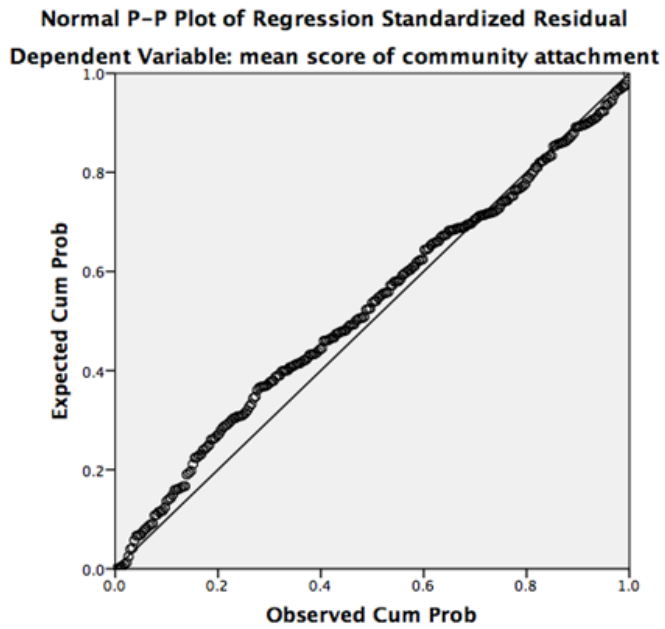
standardized predicted values shows the points are randomly dispersed throughout the plot with no systemic pattern. This indicates that the assumption of homoscedasticity was met. To test the normal distribution of residuals, a histogram (Figure 9) and normal p-p plot (Figure 10) were created. We can see that the histogram is systemic and almost bell-shaped, and the dots lied almost along the diagonal line. Hence, it is safe to conclude that the assumption of normal distribution of residuals was met.



**Figure 8** ZResid vs. Zpred scatterplot



**Figure 9** Histogram of normality of residuals



**Figure 10** P-P plots of normality of residuals

The results of regression analysis are shown in Table 24. In Model 1, when only sociodemographic variables were included, distance to the park was significantly and negatively associated with community attachment ( $\beta = -.164, p < 0.01$ ). That means that people who lived closer to the park were more attached to the local community. This model explained 2.5 percent of variance and it was significant as indicated by an *F*-ratio of 2.54 ( $p < 0.05$ ).

In Model 2, variables of interactions with the park's landscape were introduced. Controlling for the sociodemographic variables, respondents' participation in park-sponsored activities ( $\beta = .172, p < 0.05$ ) and children-oriented activities ( $\beta = .148, p < 0.05$ ) were significantly and positively related to attachment. Distance to the park, which was significant in the previous model, remained significant with a small variation ( $\beta = -.132, p < 0.05$ ). This model explained 8.1 percent of variance and it was significant with an *F*-ratio of 3.92 ( $p < 0.001$ ).

Model 3 introduced the emotional connection variables including place meaning, place identity, and place dependence. Controlling for the rest of the variables, place meaning ( $\beta = .153, p < 0.01$ ) and place identity ( $\beta = .300, p < 0.001$ ) were significantly and positively related to community attachment. This model explained 27.8 percent of variance, and was significant with  $F=10.54$  ( $p < 0.001$ ).

In Model 4, the social interaction variables were introduced. Controlling for the rest of the variables in the model, place meaning ( $\beta = .141, p < 0.05$ ) and place identity ( $\beta = .313, p < 0.001$ ) that were significant in the previous model remained significant and

were all positively associated with community attachment. Model 3 explained 27.9 percent of variance and the  $F$ -ratio was 8.66 ( $p < 0.001$ ).

The final model, Model 5, introduced the tourism influence variables. Controlling for the rest of the variables included in the model, residents' perceived tourism influence on their emotional connections with the park was significantly and positively related to community attachment ( $\beta = .249$ ,  $p < 0.001$ ). The more positive a resident perceived the tourism influence on his/her emotional connections with the park, the higher his/her community attachment level was. When effects of other variables were controlled, place identity that was significant in the previous model remained statistically significant, and was positively related with community attachment ( $\beta = .299$ ,  $p < 0.001$ ). Respondents who strongly identified with the park were more attached to the local community. This model explained 32.1 percent of variance, and the  $F$ -ratio was 8.81 and significant ( $p < 0.001$ ).

**Table 24** Hierarchy regression analysis for predictors associated with community attachment (standardized coefficient)

Predictor	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Sociodemographics</b>					
Age	.114	.099	.047	.046	.042
Distance to the park	-.164**	-.132*	-.075	-.080	-.080
Education	-.079	-.071	-.052	-.035	-.035
Employment status	-.025	-.017	-.031	-.023	-.031
Income	.001	-.015	.020	.022	.029
<b>Interactions with the park's landscape</b>					
Passive activities		.000	-.057	-.038	-.053
Park-sponsored activities		.172*	.081	.083	.097
Active activities		.020	.016	-.007	-.034
Children-oriented activities		.148*	.084	.064	.088
<b>Emotional connections with the park</b>					
Place meaning			.153**	.141*	.059
Place identity			.300***	.313***	.299***
Place dependence			.115	.108	.067
<b>Social interactions with other people in the park</b>					
Group size				.092	.072
Interactions with family and friends				-.024	-.018
Interactions with unknown people				.034	.029
<b>Tourism influence on residents' experience in the park</b>					
Negative impacts on recreational experience					-.013
Positive impacts on recreational experience					.033
Impacts on emotional connections					.249***
Adjusted R <sup>2</sup>	.025	.081	.278	.279	.321
F	2.543*	3.917***	10.542***	8.663***	8.808***
df	5	9	12	15	18
N	552-603	401-603	401-603	401-603	401-603

Note: N values vary because of missing data in one or more indicators (cases pairwise)

\*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001

## **CHAPTER VI**

### **CONCLUSIONS**

#### **Discussion on Research Findings**

This study has explored the natural realm within community attachment research. Its aim has been to examine the relationships between physical/natural landscape-based factors and community attachment. We hypothesized that respondents' community attachment was positively associated with H1) their interactions with the physical/natural landscape in an urban park, H2) their emotional connections with the park, and H3) their social interactions with others inside the park, and that their community attachment was negatively associated with H4) perceived tourism influences on their experience within the park.

Our bivariate analysis found a correlation between most of the factors used in our study. This finding suggested the need to further examine the types of relationships that existed between the independent variables and the dependent variable. We concluded such examination in the form of a series of block regressions to test how well the study's constructs predicted community attachment. We found that two of the study's hypotheses were not supported (Hypotheses 1 and 3), while two others were partially supported (Hypotheses 2 and 4). We detail these findings below.

In the case of Hypothesis 1, although there were strong correlations between all of the dimensions of the construct "interactions with the park's landscape" and community attachment, when the effects of the rest of the variables in the model were



controlled, there was no statistical significance in the model tested through the regression analysis. Thus, our study results did not provide support to the hypothesis that respondents' interactions with an urban park were positively related to community attachment levels. In this study, we measured respondents' interactions with the park's landscape through their participation in recreational activities in the park. Our findings were consistent with the conclusion of Matarrita-Cascante et al. (2010), which reported that residents' levels of community attachment in amenity-rich rural areas were not significantly explained by actual participation in recreational activities. Thus, recreational engagement does not seem to be, either in rural nor urban settings, associated with community attachment.

Additionally, we were stuck by the insignificant relationship between social interactions with others in the park and community attachment (Hypothesis 3). Again, although there were strong correlations between all the dimensions of this construct and community attachment, when controlling for the rest of the variables in the model, there was no statistical significance in the model tested through the regression analysis. Although Brehm (2007) and Matarrita-Cascante et al. (2010) argued that the physical/natural environment/landscape was important in determining community attachment with reference to social interactions occurring in the natural settings, our study did not find a statistically significant link between these two components. This may be because, as reported by Peters et al. (2010), most interactions in urban parks are cursory and unstructured. The majority of our respondents came to visit Discovery

Green with their family members, and they stayed within their own social groups. Very few intensive and structured interactions occurred in the park outside the respondents' immediate social circle. The social interactions within the park were usually triggered by children or involving casual family talk occurred. These weak interactions most likely do not lead to increased social networks and social cohesion, giving in turn, no support to the formation of community attachment (Peters et al., 2010).

Concerning Hypothesis 2, which was not rejected, our analysis found that one dimension of respondents' emotional connections with an urban park was positively associated with community attachment. This consisted of the construct measuring place identity. As shown by the results of the multivariate analysis, one emotional connection dimension of place identity was the strongest (positive) predictor of community attachment. That means that respondents' attachment to the local community was strongly tied to their self-identity with the park. This is in line with previous theoretical arguments that have suggested that one way to lead to increase community attachment is to promote place identity associated with the physical environment as (Matsuoka & Kaplan, 2008). According to Proshansky (1978), place identity refers to a connection between places and individuals' identities. In this sense, place can be part of an individual's self-identity or embedded in his or her definition of self (Kudryavtsev et al., 2012; Kyle et al., 2005), which is reflected in statements regarding place identity that contain the words "I" and "me" (see Table 7 in p.45 for the first four items measuring place identity; Petty, Chipuer, & Bramston, 2003). Used as a predictor of place

attachment (e.g. Kyle et al., 2004b), place identity has been found to lead to people developing emotional and psychological connections with places. It has been suggested that humans naturally harbor physiological attachment to natural objects (Kaplan, 1984; Ulrich, 1986). Especially in a compact urban area with high density in the inner city, like the inner-Houston area studied here, people's appreciation of physical and natural attributes in Discovery Green evokes feelings toward the park. Such feelings find expression in residents' emotional sentiments, and their feelings of belonging to, and their identification with local communities. As suggested by Dines and Cattell (2006), people develop relationships with public places along with attachment to their communities. Our study offers empirical support for such assertions. In this case, the emotional values that an urban park evokes lead to people developing local attachment to one's community. Our study findings indicate that the emotional and affective components of people-place relationships are relevant to an understanding of a community's local social fabric.

Regarding Hypothesis 4, since urban parks have increasingly served both residents and tourists for leisure purposes, this study examined the role of tourism in shaping residents' experiences in an urban park and how these affected their community attachment levels. This hypothesis was partially supported; we found a statistically significant relationship between one dimension in this construct and community attachment. This relationship, however, had the opposite effect than what we had hypothesized. More specifically, our study found that residents' perceptions of tourism's

influence on their emotional connections with the park were significantly associated, in a positive way, with community attachment.

Respondents perceived tourists' in Discovery Green as strengthening their emotional connections with the park. According to them, tourists' visits to Discovery Green enhanced locals' positive feelings toward the local community. This finding stands in contrast to Ko and Steward's (2002) finding that residents' attitudes toward their community are closely related to perceived negative tourism influences. We believe that this positive relationship with tourism may be due to the level of tourism development in Discovery Green. Discovery Green is a host-dominant park (about 95-97 percent of visitors are locals) and is only in its initial stage of attempting to attract more tourists (Discovery Green Conservancy, 2013). The tourism development literature has suggested that at such a stage residents tend to perceive tourism impacts positively with the belief that tourism is a tool for economic development (Lawson, Williams, Yong, & Cossens, 1998; Lepp, 2007). Hence, as it benefits the park and its users, our respondents perceive the influence of tourism in a more positive way.

As noted earlier, people's emotional connections with natural places include both cognitive and affective components (Kudryavtsev et al., 2012). Humans attribute symbolic meanings to a place of nature based on their cognition, and further develop a positive emotional or affective bond to it (Stedman, 2002a). In this case, when mingling with tourists in the park, respondents develop strong emotional connections with the park as they ascribe additional symbolic meanings to the park landscape and become

more attached and begun to identify with it. These strong emotional connections and local identities further find expression in increased levels of attachment to the local community with reference to the park landscape.

### **Theoretical Implications**

Theoretically, this research has extended results of recent studies exploring the role played by the physical/natural landscape in predicting community attachment. The framework has been expanded by targeting multiple landscape-related factors. To refine the approaches previous research adopted to measure natural environment-oriented attachment (e.g. Brehm et al., 2004), this study has included additional measures from four dimensions: respondents' interactions with the landscape through engagement of recreational activities, respondents' spiritual and emotional bonds to the natural landscape, social interactions occurred within landscape settings, and perceived tourism influences on locals' experience with the landscape. Our study adds to this body of literature and improves our understanding of the natural dimension of community attachment. Prior studies have focused on the predictive qualities of the natural environment in amenity-rich communities; this research first shifts the discussion to urban landscapes in urban communities. Regardless of the different conditions and functions of the physical/natural landscape in rural and urban contexts, this study has found common ground with earlier studies concerning the potential contributions of the physical/natural landscape to increased community attachment. Our study findings strongly support the conception that community attachment is not completely socially

dominant, but it also depends on individuals' experiences and emotional connections with local natural landscapes. The goal of this study, it should be noted, is not to undermine the importance of the social aspect examined in traditional community research, but to highlight the need in attachment studies to include both the physical/natural and social attributes of communities.

In addition, this study has utilized measures of sense of place, for a more comprehensive understanding of the physical/natural landscape as a source of community attachment. Typically, place literature has focused on individuals' connections with specific places without considering the aggregate effects such connections may produce on the larger social context. Conversely, community research pays special attention to local social structure and relationships, but ignores the place-based values of where the community locates. Despite the focus and scale disparity between community and place literature (Trentelman, 2009), scholars have pointed out the great potential for combining these two research traditions (Manzo & Perkins, 2006; Matarrita-Cascante et al., 2010; Stedman, Amsden, & Kruger, 2006; Trentelman, 2009).

In response, this study has created its measures by utilizing the notion of sense of place to explore the relationship between ones' community attachment and emotional connections with the physical/natural landscape. The research findings have demonstrated that integrating measurements of sense of place is a fruitful approach to understanding how people develop strong attachment to their community with reference

to the local physical/natural landscape, evidenced by place identity emerging as a strong predictor of community attachment.

Our study has shed light on the link between place attachment and community attachment by revealing the importance of place identity. This empirically supports the feasibility of synthesizing community and place theories to better understand relationships between people and locales. By emphasizing the important roles that the physical/natural landscape plays in developing community attachment, our study has found these two literatures are not so isolated from each other. Community attachment is multidimensional; people may become attached to a local community for different reasons. Affective attachment to a particular landscape or natural place within the local community contributes to the development of community attachment out of appreciation for the local physical/natural landscape. We have empirically supported the theoretical supposition proposed by Stedman et al. (2006) that evaluations of the natural attributes of locales (place identity) serve as a basis of increased attachment at the community level. Consistent with previous research (e.g., Pretty et al., 2003), this study has addressed that people's attachment to place is often mingled with their feelings of community. The social and psychological processes, which are at the root of place attachment, also give rise to the development of community attachment.

Nevertheless, actual behaviors like participation in recreational activities and interactions with other social actors within the landscape have been found to be unrelated to community attachment. The physical/natural landscape serves as a basis of

community attachment with people who may have no direct experience with the landscape, yet feel strong emotional connections. This is in line with the place attachment view that people can form strong bonds to landscapes that they have never visited or directly experienced (e.g., Blake, 2002; Brown, Reed, & Harris, 2002; Hammitt, Backlund, & Bixler, 2004; Stedman, 2002). Thus, we may conclude that individuals can develop strong attachment to their community due to their emotional bonds with certain local landscapes regardless the shallowness of their direct experience with such landscapes. This suggests that in determining community attachment emotions play a role more important than that of actions.

This research represents a crossover area between the place and community literatures. As an interdisciplinary study that incorporates place theory into community attachment study, this study has found a connection between these two research traditions. This sets a theoretical rationale for future studies to include the conception of place in their discussions of community, recognizing therein the importance of local physical/natural landscape to community life.

In addition to being informed by the community attachment literature, the study findings are also informed by the urban park and tourism literatures. According to Masberg and Jamieson (1999), the relationship between urban parks and tourism is neither well understood nor recorded, though that relationship certainly exists. Very few studies to date have specifically linked urban parks and tourism and examined the relationships between these two. Still, the tourism research tends to neglect urban parks



while park studies tend to neglect tourism (Archer, 2006). Most of the studies addressing the relationship between urban parks and tourism remain at the descriptive level—counting the number of tourists and recording their preferences for and satisfactions with urban parks (e.g., Chaudhry & Tewari, 2010; Wong & Domroes, 2004, 2005; Wu, Wang, & Ho, 2010). Unfortunately, literature has not shown us clear evidence regarding the impacts of tourism on urban parks and citizens' opinions of tourists' visits to park spaces.

In this study, we have linked these two fields of inquiry—tourism and urban parks—by understanding how residents' perceive tourism to be an influence on their experience in urban parks. The study found that residents believed tourists' visits to the urban park enhanced their attachment to the park place and their feelings toward the local community. This suggests that along with tourism development around and tourists' visits' to urban parks, local residents have become more emotionally connected with park spaces. Our study identified the connections between urban parks and tourism, revealing the important influence of tourism, which is its capacity to strengthen the local park visitors' emotional bonds to urban parks.

### **Practical Implications**

This research has several practical implications. This study has a practical implication for urban park planning and design. For many urban residents, parks are very important in their day-to-day life. Citizens perceive urban parks from different perspectives depending on their experiences, through which they establish strong connections with these places (Ryan, 2005). It is crucial that park planners and designers

understand how people use parks and become connected with parks, to ensure their proposed planning and designs take into account these diverse viewpoints. The strong levels of place identity found in our study are indicative of the deep emotional connections that residents develop with the urban park. As noted by Farnum et al. (2005), if people deeply connect their self-identity with places, it is important for managers to be aware that their management actions would not interfere with people's interactions with those places and incur negative effects on visitors' place-based experience. According to Williams and Stewart (1998), a better understanding of place attachment would help managers to "anticipate, identify, and respond to the bonds people form with places" (p. 18). As a principle facet of place attachment, the recognition of place identity associated with the urban park in this study provides managers valuable knowledge when evaluating changes and modifications in the design and management of parks. Individuals who strongly identify with a particular place are usually sensitive in the face of changes associated with the place. This suggests that urban park planners and managers should implement design and management strategies progressively, allowing time to evaluate these changes and modifications and revise those decisions by taking the public's responses into account (Kaplan, Kaplan, & Ryan, 1998).

Additionally, our study findings explain the relationships formed between people and parks, and their positive effects on community attachment. According to Williams and Patterson (1999), "if we have the capacity to manage anything, at least directly, it is more likely the social system" (p. 156). Decisions about natural areas should be guided

by our understanding of a social process describing how natural areas affect the lives of nearby residents (Clark & Stein, 2003; Williams & Patterson, 1999). Galliano and Loeffler (1999) suggested that management of natural places needs to take community values and meanings into consideration. Beyond the appreciation of urban parks from individuals' pragmatic needs, this study transcends the functions of urban parks as they strengthen people's emotional sentiments to the local community. Despite their intangible nature, the feelings and affections evoked in the park have been found as contributing importantly to their attachment to the local community. Therefore, valuations of the emotional connections between local park users and urban parks should be integrated into urban park planning strategies and policy decisions. Such valuations could be exercised by facilitating discussions on the public's needs and value orientations associated with parks. In this way, planners and managers would be able to assess the general perceptions from the adjacent communities. Such information would help them implement effective development strategies that would foster residents' attachment to urban parks. The establishment of such strong people-park bonds would contribute to forming cooperation and collaborations between communities and park agencies, and reduce potential conflicts between community stakeholders. This is essential to the survival and sustainability of urban parks through the support of local communities.

This study's findings also play a significant role in forming tourism planning decisions. Increasingly, it has been argued that "tourism planning should be as much

about planning for residents as planning for visitors” (Liu & Wall, 2006, p. 160). Both academics and practitioners have realized the long-term importance of local residents’ perception of and support for tourism development (e.g., Harrill, 2004; Harrill & Potts, 2003; Oviedo-Garcia, Castellanos-Verdugo, & Martin-Ruiz, 2008; Reid, Mair, & George, 2004; Yuksel, Bramwell, & Yuksel, 1999). Residents who obtain more individual benefits from tourism tend to highlight the positive impacts of tourism activities and offer greater support of further development (Oviedo-Garcia et al., 2008).

In this study, we found that residents’ perceive tourism development and tourists’ visits to the urban park positively, enhancing their emotional connections with the park place and further improving their community attachment levels. This recognition of the tourism-park-community relationships suggests tourism planners should develop a tourism planning process aimed at reinforcing locals’ positive attitudes toward tourism/tourists and revealing community values. It is essential for tourism planners to consider what benefits local residents obtain from urban parks and how to maintain and increase those benefits through tourism-oriented activities. A better understanding of the values of urban parks to the residents’ well-being and community life derived from this study indicates that planners should communicate such benefits and values of parks with residents through marketing strategies. In this way, residents’ interactions and emotional bonds with urban parks, as well as their positive attitudes toward tourism development around the parks, could be strengthened. Tourism planners may experience increased

support from local communities. This, in turn, is important to promote tourism development sustainably.

### **Study Limitations and Suggestions for Future Research**

This study has several limitations that ought to be addressed in future research. First, the study is limited to one study site—Discovery Green park. No comparisons can be made to determine whether the predicting variables examined in this study will present consistent or different powers in other urban parks. Parks have different characteristic in terms of size (Gile-Gorti et al., 2005), number of features and amenities (Kaczynski, Potwarka, & Saelens, 2008), presence of sports fields (Floyd, Spengler, Maddock, Gobster, & Suau, 2008), trails (Kaczynski et al., 2008; Reed et al., 2008; Shores & West, 2008), and drinking fountains (McCormick et al., 2010), and accessibility (Kaczynski & Henderson, 2007). All these attributes are associated with use of parks and engagement of physical activity at parks (McCormick et al., 2010) for different groups of people. This suggests that parks may elicit from people varying levels of preference and connections. It would be more fruitful for future research to include additional study sites to explore whether these landscape-based factors display consistent predictive values on community attachment across parks.

Second, this study is limited to park landscape only. Urban physical/natural landscape consists of various types such as green spaces, green trails and gardens. People enjoy different types of landscapes for different purposes, which in turn shapes their evaluations and attitudes associated with certain types of landscape (Swanwick,

2009). Given the multifaceted characteristics of urban physical/natural landscape, future research should incorporate multiple types of landscape and examine their effects on community attachment and discover whether such effects vary across different landscapes.

Third, a sign of measurement problems in this study may be indicated by the insignificant relationships it found between community attachment and interactions with the park's landscape and social interactions that occurred within the park setting. Our study measured landscape-based interactions through respondents' participation in several recreational activities at the park. These measures, however, are somewhat abstract, and not significant in predicting the levels of community attachment.

Additional measures may be needed to better explain the outcome variable. In this study, we do not investigate respondents' levels of involvement in activities in urban park, motivations for park visits, or satisfaction with their experience associated with park landscape and qualities of park services. But we believe incorporating these measurements will present a more complete conception of how urban physical/natural landscape-based interactions contribute to increased community attachment.

Additionally, studies have widely acknowledged the value of urban parks for facilitating social interactions (e.g., Matsuoka & Kaplan, 2008; Peters et al., 2010), but they have yet to well establish quantitative measures of these interactions. The constructs created in this study are still immature. Thus, further refinements and expansion are

desired to capture more values of social interactions in urban parks and to explore their contributions to community life.

Fourth, although one dimension of emotional connections with urban parks—place identity—has been identified as a strong and positive factor in fostering community attachment, this study does not examine how such strong place identity is formed. Given the power of self-identity with the park place in predicting attachment, further research should investigate the sources of emotional connections with urban parks: what is the basis—whether through the presence of park features or through interactions with the park’s landscape or other social actors—of such strong self-identification? We believe incorporating measures of the formation of place identity would present a more comprehensive picture of urban parks’ values and their significance in community life.

Finally, future research should diversify the study sample. In this study, we only studied local park visitors. This may result in a bias in the research findings since our respondents may be homogenous in terms of how they experience and feel about the park. It will be essential for future research to target diverse population groups and to identify the variability in their attachment levels associated with physical/natural landscapes.

In summary, we believe this study, makes great contributions to the community literature by exploring the role of the physical/natural landscape in forming community attachment. Our results suggest that emotional connections with the local

physical/natural landscape are an important determinant of how residents become attached to their communities. Usually, attachment reveals its importance when it brings people together to work collectively for what they concern about (Moore & Graefe, 1994). Hence, a better understanding of the sources of community attachment is central to promoting participation—that, critical component of successful community development (Matarrita-Cascante et al., 2010). Community leaders who recognize the importance of landscape in residents' attachment to their communities are better equipped to implement effective development strategies, being guided by community interests to promote and sustain landscape qualities.

In future research focusing on predictions of physical/natural landscape-related factors on community attachment, researchers should study different sites by targeting various types of landscapes and populations, while measuring additional factors.



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## APPENDIX A

### SURVEY QUESTIONNAIRE

#### Residents' Attitudes toward Discovery Green Park and Their Community



(Discovery Green, 2015)



(Texas A&M University, 2015)

#### DEPARTMENT OF RECREATION, PARK AND TOURISM SCIENCES College of Agriculture and Life Sciences AGLS Building, 2261 TAMU, College Station, TX, 77843-2261

Dear Participant:

My name is Ying Xu, and I am a doctoral student at Texas A&M University. For my dissertation research, I am examining the contributions of urban parks to communities. Because you are a visitor to Discovery Green Park, I am inviting you to participate in this research study by completing the attached survey questions. The following questionnaire will take approximately 15 minutes to complete. There are no known risks to participating in this survey. To ensure that all information will remain confidential, please do not include your name on the questionnaire.

Please take the time to help us by filling out this questionnaire and returning it in the enclosed postage-paid envelope. When you return your completed questionnaire, your name will be entered into ***drawing for 4 prizes of \$25 value. Winners will be drawn as soon as the survey process is complete by August 6, 2015, and the prizes will be sent to you via US mail.***

This study has been reviewed and approved by the Institutional Review Board – Human Subjects in Research, Texas A&M University. If you have any questions about the questionnaire, please contact Ying Xu at 979-676-0735, xuying129@tamu.edu or Dr. David Matarrita-Cascante at 979-845-8522,. Thank you in advance for any help you can contribute to the success of this study.

Sincerely,  
Ying Xu

### Section One: Experience with Discovery Green Park

1. Before today, when was the last time you visited Discovery Green Park? (Please ✓ check ONE)

- |  |  |
|--|--|
| <input type="checkbox"/> This is the first time I have visited<br>Discovery Green → Skip to question 4 | <input type="checkbox"/> Within the last year  |
| <input type="checkbox"/> Within the last week  | <input type="checkbox"/> 1-5 years ago         |
| <input type="checkbox"/> Within the last month   | <input type="checkbox"/> More than 5 years ago |

2. About how many times have you visited Discovery Green Park in the last 12 months (including current visit)?

- \_\_\_\_\_ visits (Please write in a number)

3. During the last 12 months, how often have you participated in the following activities in Discovery Green Park ? (For each activity, please circle ONE answer)

	Never	Rarely	Sometimes	Often	Always
Concerts/movies/shows	1	2	3	4	5
Special events/festivals	1	2	3	4	5
Socializing with family and/or friends	1	2	3	4	5
Receptions/parties	1	2	3	4	5
Outdoor sports and/or games	1	2	3	4	5
Fitness classes (Bum-ba Toning, Yoga, Zumb, etc.)	1	2	3	4	5
Visiting gardens	1	2	3	4	5
Walking the dog	1	2	3	4	5
Kayaking/boating	1	2	3	4	5
Playing around the fountain area	1	2	3	4	5
Walking/jogging/running	1	2	3	4	5
No specific activity, just enjoy a nice day out in the park	1	2	3	4	5
Children's programming and/or play	1	2	3	4	5
Other _____ (please specify)	1	2	3	4	5

## Section Two: Emotional Connections with Discovery Green Park

4. In your opinion, Discovery Green Park is (Please circle a number representing how much you agree or disagree with each statement)

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither agree or disagree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. a place to escape the pressure of urban life	1	2	3	4	5
b. a place to appreciate the beauty of nature	1	2	3	4	5
c. a place to participate in outdoor recreational activities	1	2	3	4	5
d. a place for citizens' well-being	1	2	3	4	5
e. a place to meet friends and socialize	1	2	3	4	5
f. a place that develops positive feelings about the community	1	2	3	4	5
g. a place representing the image of Houston	1	2	3	4	5
h. a place for tourists to visit	1	2	3	4	5
i. a window into the diversity of traditions of Houston	1	2	3	4	5
j. a fun place for children to play	1	2	3	4	5

5. How do you feel about Discovery Green Park (Please circle a number representing how much you agree or disagree with each statement)

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither agree or disagree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. This park means a lot to me	1	2	3	4	5
b. I am very attached to this park	1	2	3	4	5
c. I strongly identify with this park	1	2	3	4	5
d. I have special connections to this park and the people who visit the park	1	2	3	4	5
e. I enjoy visiting this park more than any other park	1	2	3	4	5
f. I get more satisfaction out of visiting this park than from any other park	1	2	3	4	5
g. Visiting this park is more important than visiting any other park	1	2	3	4	5
h. I would not substitute other parks for the activities I do here	1	2	3	4	5

### Section Three: Social Interactions in Discovery Green Park

6. How many people (including adults and youths) are usually with you when visiting Discovery Green Park? (Please ✓ check ONE)

- ☐ Alone
 ☐ 6-10 other people  
☐ 1-2 other people
 ☐ More than 10 other people  
☐ 3-5 other people

7. How often do you interact socially with your family and friends in Discovery Green Park? (Please circle one answer for each item)

	Never	Rarely	About once a year	Several times a year	About once a month	Several times a month	About once a week	Several times a week
Family and friends in my household	1	2	3	4	5	6	7	8
Family members outside my household	1	2	3	4	5	6	7	8
Friends outside my household	1	2	3	4	5	6	7	8

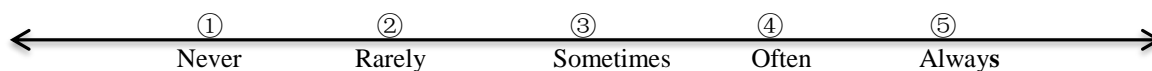
8. During your visit(s) to Discovery Green Park, have you ever talked to people you don't know in the park?

- ☐ Yes
 ☐ No → Skip to question 11

9. (If Yes) Please indicate how often you have interacted with people you don't know in this park in each of the following scenarios (For each item, please circle ONE answer)

	Never	Rarely	Sometimes	Often	Always
a. Talking with other parents when children were playing together	1	2	3	4	5
b. Chating with other dog owners when walking my dogs	1	2	3	4	5
c. Simply saying hello in passing to others	1	2	3	4	5
d. Playing inform sports or games with others	1	2	3	4	5
e. Talking with other people while attending concerts, dance parties or other special events	1	2	3	4	5
f. Talking with other people while exercising, participating in fitness classes, or other programming offered in the park	1	2	3	4	5

**10.** Overall, how often you would say that you socially interact with people you do not know in Discovery Green Park? (Please answer by marking the appropriate circle/number)



**11.** Are you more or less likely to interact with people in the park than in other public spaces in downtown (like along the street)? (Please answer by marking the appropriate circle/number)



**Section Four: Attitudes about Tourists at Discovery Green Park**  
(NOTE: Please define “tourists” based on your definition)

**12.** For each of the following statements, please indicate the degree to which you agree or disagree by circling the appropriate number.

Tourists visiting Discovery Green Park have:

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither agree or disagree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. increased recreational opportunities in the park	1	2	3	4	5
b. reduced the qualities of outdoor recreational facilities in the park	1	2	3	4	5
c. created an unpleasantly overcrowded park for the local population	1	2	3	4	5
d. encouraged a variety of cultural activities hosted in the park by the local population (e.g. music, arts)	1	2	3	4	5
e. disrupted the peace and tranquility of the public park	1	2	3	4	5
f. increased traffic problems that affect local peoples' visit to the park	1	2	3	4	5
g. attracted more investment to the park for recreational activities	1	2	3	4	5



**13.** For each of the following statements, please indicate the degree to which you agree or disagree by circling the appropriate number

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither agree or disagree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. Tourists visiting to Discovery Green Park make it more a tourist destination	1	2	3	4	5
b. Tourists improve the environmental quality of Discovery Green Park	1	2	3	4	5
c. Tourists help to enhance the appeal of Discovery Green Park	1	2	3	4	5
d. The image of Houston is reflected through Discovery Green Park to tourists	1	2	3	4	5
e. Tourists make Discovery Green Park more a place for recreation and leisure	1	2	3	4	5
f. Tourists at Discovery Green Park help develop stronger positive feelings about the community by local population	1	2	3	4	5
g. Tourists at Discovery Green Park enhance the cultural identity of host community (Houston)	1	2	3	4	5
h. Tourists at Discovery Green Park help the local population to be more attached to the park	1	2	3	4	5
i. Tourists at Discovery Green Park enhance its contribution to local residents' well-being	1	2	3	4	5

**14.** During your visit(s) to Discovery Green Park, have you ever interacted with tourists?

☐ Yes

☐ No → Skip to question 16

**15.** Please characterize your feelings about your interactions with tourists at Discovery Green Park (Please circle one number per statement)

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither agree or disagree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. My interactions with tourists are positive	1	2	3	4	5
b. I enjoy interacting with tourists in the park	1	2	3	4	5
c. I have developed friendship with tourists	1	2	3	4	5
d. I feel affection towards tourists who visit Discovery Green park	1	2	3	4	5
e. I am proud to have tourists come to Discovery Green Park	1	2	3	4	5

**(NOTE: The community here refers to the inner Houston area)**

① ② ③ ④ ⑤

Not interested at all Very interested

- ☐ Very sorry to leave
- ☐ Somewhat sorry to leave
- ☐ It wouldn't make any difference one way or the other
- ☐ Somewhat pleased to leave
- ☐ Very pleased to leave

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neither disagree or agree</u>	<u>Agree</u>	<u>Strongly Agree</u>
a. I feel this community is a real home to me	1	2	3	4	5
b. I feel I belong to this community	1	2	3	4	5
c. I feel I am fully accepted as a member of this community	1	2	3	4	5
d. Most people in this community would go out of their way to help me if I was in trouble	1	2	3	4	5
e. Most of the people in this community can be trusted	1	2	3	4	5

19. What is your gender?    a. Female      b. Male

20. What is your age? \_\_\_\_years old

21. What is the zip code of your residence? \_\_\_\_\_

**22.** What is the highest level of education you have completed?

- |  |  |
|--|--|
| <input type="checkbox"/> Less than a high school degree                          | <input type="checkbox"/> 4-year College/University Bachelor's degree |
| <input type="checkbox"/> High school degree or GED                               | <input type="checkbox"/> Advance degree (Master's, Ph.D., JD, MD)    |
| <input type="checkbox"/> Some college  |  |
| <input type="checkbox"/> Trade/technical/vocational training or associate degree |  |

**23.** What is your race/ethnicity? (Please ✓ check ONE that best applies)

- |  |   |
|--|---|
| <input type="checkbox"/> White/Anglo               | <input type="checkbox"/> Native American or American Indian |
| <input type="checkbox"/> Hispanic or Latino        | <input type="checkbox"/> Asian / Pacific Islander           |
| <input type="checkbox"/> Black or African American | <input type="checkbox"/> Other (please specify)_____        |

**24.** Employment Status: Are you currently...?

- |   |  |
|---|--|
| <input type="checkbox"/> Employed for wages                             | <input type="checkbox"/> A student                   |
| <input type="checkbox"/> Self-employed                                  | <input type="checkbox"/> Military                    |
| <input type="checkbox"/> Out of work and looking for work               | <input type="checkbox"/> Retired                     |
| <input type="checkbox"/> Out of work but not currently looking for work | <input type="checkbox"/> Unable to work              |
| <input type="checkbox"/> A homemaker                                    | <input type="checkbox"/> Other (please specify)_____ |

**25.** Including yourself, how many people are living in your household at present time?  
\_\_\_\_number of people

**26.** How many children age 5 or younger do you currently have living at home?  
\_\_\_\_number of children

**27.** How many children age 6 to 18 do you currently have living at home?  
\_\_\_\_number of children

**28.** How many adults over the age of 65 live with you in your home?  
\_\_\_\_number of adults over the age of 65

**29.** What is your total household annual income before taxes for 2014?

- |  |  |
|--|--|
| <input type="checkbox"/> Less than \$10,000    | <input type="checkbox"/> \$50,000 to \$74,999    |
| <input type="checkbox"/> \$10,000 to \$14, 999 | <input type="checkbox"/> \$75,000 to \$99,999    |
| <input type="checkbox"/> \$15,000 to \$24,999  | <input type="checkbox"/> \$100,000 to \$149,999  |
| <input type="checkbox"/> \$25,000 to \$34,999  | <input type="checkbox"/> \$150,000 to \$ 199,999 |
| <input type="checkbox"/> \$35,000 to \$49,999  | <input type="checkbox"/> \$200,000 or more       |

In here we would like to leave space for you to add any additional comment related to this survey or in general of Discovery Green Park

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Would you like to leave your email address for a chance to win a prize of \$25 value? Your email address will not be published

- ☐ Yes (please write your email address here)\_\_\_\_\_
- ☐ No

Thank you very much for your participation! I appreciate your assistance!